

ART. X. *Report on the Epidemic Cholera Morbus, as it visited the Territories subject to the Presidency of Bengal, in the years 1817, 1818, and 1819.* Drawn up by order of the Government, under the superintendence of the Medical Board. By JAMES JAMESON, Assistant Surgeon and Secretary to the Board. Calcutta, 1820, pp. lxxxiv and 324, 8vo. With a map.

*Sketches of the most Prevalent Diseases of India; comprising a Treatise on the Epidemic Cholera of the East, &c. &c.* By JAMES ANNESLEY, Esq. Madras Medical Establishment, &c. &c. &c. Second edition, London, 1831. With a map.

*Treatise on Cholera Asphyxia or Epidemic Cholera, as it appeared in Asia, and more recently in Europe.* By GEORGE HAMILTON BELL, Fellow of the Royal College of Surgeons, Edinburgh, late Residency Surgeon, Tanjore. Edinburgh and London, 1831, pp. 150, 8vo. With a map.

*A History of the Contagious Cholera, with Facts explanatory of its Origin and Laws, and of a Rational Method of Cure.* By JAMES KENNEDY, Member of the Royal College of Surgeons, London, pp. 291. With two maps.

*Quelques Réflexions sur le Choléra Morbus.* Par le Dr. JAEHNICHEN, Membre du Conseil temporaire de Medecine de Moscou. Moscow, 1831.

*History of the Epidemic Spasmodic Cholera of Russia; including a Copious Account of the Disease which has prevailed in India, and which has travelled under that name from Asia into Europe. Illustrated by numerous Official and other Documents, explanatory of the Nature, Treatment, and Prevention of the Malady.* By BISSET HAWKINS, M. D. &c. London, 1831. pp. 306. With a map.

**CHOLERA** is the absorbing topic at the present moment in the medical world, and even in the political, it divides attention with the questions, momentous as they are, which are now agitating the nations of Europe, and shaking to the very foundations their ancient institutions. The mystery which seems to hang over the origin and mode of propagation of this pestilence, has invested it with a sort of fearful interest; whilst there is something so appalling in the steadiness with which it has advanced over a large portion of the globe, unimpeded by oceans, or mountains, or winds, or the artificial barriers by which man has attempted to arrest its progress—in the rapidity with which it destroys its victims, often striking them to the earth, to expire on the spot where they have fallen—and in the awful

mortality it has caused, compared to which the destruction of life in the most destructive wars sinks into insignificance—that it would be indeed extraordinary, were it not the subject of universal attention. Apart, however, from its general interest, it has for us, as physicians, higher claims to attention. Commencing only a few years since near the borders of the Ganges, it has invaded nearly the whole of Asia, overrun the east and north of Europe, and at the latest dates was steadily advancing, threatening to extend over the remainder of the eastern hemisphere, and affording even grounds for fear that the western world may not escape its visitation. It consequently becomes our duty to render ourselves familiar with its history, character, and treatment, since we know not how soon we may be called upon to contend against its ravages. The anomalous features which this disease has exhibited, the contradictory and even irreconcilable statements that have been given of its etiology, and the diversity of sentiment entertained as to its pathology and best mode of treatment, render the acquisition of correct knowledge in relation to these points, a task of no little difficulty. We shall endeavour to assist our readers in the accomplishment of it, by laying before them the most authentic facts that we have been able to glean from the various sources that have been open to us, and arranged in the best manner that the late period at which many of the documents were received, will permit. Without further preface then we shall commence with a brief sketch of the history of the complaint.

Cholera is not a new disease. It is noticed in the earliest records of the science. HIPPOCRATES distinctly speaks of it, and it is very accurately described by ARISTEUS, of Cappadocea. SYDENHAM notices its prevalence in London, in 1669 and in 1676; and HUXHAM, in 1741. It existed extensively in Paris at various periods, particularly during the summer of 1730, and in July, 1780; and perhaps there is no country in which sporadic cases do not occasionally occur. In India it appears to have been endemic from the most remote periods. Mention is said to be made of it in the ancient medical writings of the Hindoos, and it is noticed by the earliest European writers on the diseases of that country. BONTIUS, a Dutch physician, residing at Batavia, and who wrote in 1629, very accurately describes it. LEBEGUE DE PRESLE speaks of its having prevailed in upper Hindostan, in 1762, where he says it destroyed 30,000 negroes, and 800 Europeans. Dr. PAISLEY, in a letter from Madras in 1774, states that it was often epidemic, especially among the blacks. M. SONNERAT, in the account of his travels in India, between the years 1774 and 1781, mentions that cholera prevailed on

the Coromandel coast, and at one period more particularly assumed an epidemic and malignant character.\* CURTIS, in his work on the diseases of India, and GIRDLESTON, in his essay on the spasmodic affections of that country, speak of an unusual prevalence of the disease during 1781 and 1782. It prevailed in the Northern Circars in the early part of 1781 and in the latter end of March it affected at Ganjam, a division of Bengal troops, consisting of five thousand men, who were proceeding under the command of Colonel Pearce of the artillery, to join Sir Eyre Coote's army on the coast. Men previously in perfect health dropped down by dozens, and those even less severely affected were generally dead or past recovery within less than an hour.† Above five hundred were admitted into hospital in one day, and in three days more than half the army were affected. The disease was referred to the heavy dews and great vicissitudes of the weather, connected with the peculiar situation of the troops; they had been marching almost incessantly for six days through sand and salt water, and were at length so enfeebled as scarcely to be able to move. A violent wind blew day and night along the whole shore, and although it was not so strong at night, it was then accompanied with such a penetrating moisture as to wet through the thickest woollen clothes. The troops were besides in no condition to withstand the inclemency of the season. They had no tents, and few possessed even a blanket to shelter them on getting to their ground. They generally marched in the night, and many suffered by incautiously lying down, while warm from exercise, and falling asleep, exposed to the influence of a damp and noxious atmosphere.‡

During the months of April and May, 1782, the disease prevailed at Trincomalee, and in Sir Edward Hughes' squadron at Madras.

In April, 1783, it broke out at Hurdwar, on the Ganges, a spot held particularly sacred by the Hindoos, where an immense concourse of people annually assembled for the purpose of ablution in the holy stream. The year in question, the number of persons collected was believed to amount to between one and two millions. It is the custom of the pilgrims to repair to the bed of the river, where they pass the night with little, if any shelter; many persons being crowded together under the cover of a single blanket thrown out as an awning. The temperature is very variable; the days being hot and the nights cold, with heavy dews, and sudden chilly blasts from the clefts in the mountains. On the present occasion these causes§ were

\* Annesley, p. 7.

† Bengal Report, p. xvii.

‡ Idem, p. xx, i.

§ "One manuscript in our possession says, the disease broke out on the springing up of an easterly land wind during a hot night, and carried off innumerable persons."—*Bengal Report*.

sufficient to generate the cholera, which broke out soon after the commencement of the ceremonies, and raged with such extreme violence, as to cut off in less than eight days, above twenty thousand victims. So confined, however was its influence, that it did not reach the village of Jawalapore only seven miles distant, and ceased immediately on the concourse breaking up on the last day of the festival.\*

In 1787 the disease prevailed at Arcot and Vellore, and about the end of March, 1790, it appeared in a detachment of Bengal troops, under Colonel Cockerel, whilst marching to Seringapatam. The weather is said to have been very uncomfortable, a fresh southerly wind prevailing during the day, increasing in strength towards mid-day, and dying away in the evening. A calm night succeeded, close and sultry in the early part, and damp and chill, with heavy dew, and slight easterly wind from the sea towards morning. The days were cloudy, and the atmosphere loaded with vapour. On the 15th of April the activity of the disease was heightened by a heavy squall of wind and rain, which overtook the detachment at Manikpatam, on the north side of Chilka lake. From this time until the middle of June, when the detachment had passed Ellore, and the weather had become more moderate from frequent rains, the disease proved very fatal. The troops had no tents, and were sheltered from the inclemency of the night by only a blanket stretched across a pole, and even this was not possessed by the camp followers. The troops were much harassed by long marches on a sandy soil, frequently not affording water, and from the difficulty of dragging the guns over very bad roads, they frequently did not reach their ground until sunset. In the middle of the day the thermometer was as high as 124.†

In fact a disorder possessing the principal characters of cholera appears to have prevailed more or less endemically during the hot and rainy seasons of every successive year in the lower provinces of Hindostan, but chiefly limited in attacks to those whose constitutions had been debilitated by poor, ungenerous diet, and by hard labour in the sun, and who were badly clothed, and frequently exposed in low and foul situations to the cold and damp air of the night. It rarely occurred during the dry months. Europeans were scarcely ever affected by it, and the better class of natives were rarely subjected to its influence.‡

No positive evidence has been found of its having prevailed extensively as an epidemic previously to 1817, though Mr.

\* Bengal Report, p. xvi.

† Idem, p. xxii.

‡ Idem, p. 2.

Bell thinks it probable that the tremendous pestilences, which are so frequently described by native historians as having devastated Indian armies, were the cholera.\* It must also be mentioned that it appears to have assumed an epidemic form in 1781, the period at which it attacked Colonel Pearse's detachment at Ganjam, for the supreme government, in communicating this latter event to the court of directors, state that the disease was not confined to Ganjam; but afterwards found its way to Calcutta, and after chiefly affecting the native inhabitants, so as to occasion a great mortality during the period of a fortnight, pursued its course to the northward.†

It is much to be regretted that all attempts to trace its further progress has proved fruitless.

The disease, it is generally conceded, first acquired its present epidemic character in 1817, and it appears to have first attracted particular attention on its breaking out at Jessore, a large and populous town, about sixty-two miles east of Calcutta. It did not originate there, however, as is usually represented, but broke out simultaneously in various and distant parts of Bengal. As early as July, it appeared at Sunergong, and had even begun to prevail epidemically in the distant provinces of Behar and Dacca; on the 11th of the month it broke out in the city of Patna, three hundred miles north-west of Calcutta, and spread to the contiguous station of Dinapore, and to the adjacent villages, early in August, and by the middle of the month, it appeared in the remote province of Silhet. On the 23d of August it was raging at Chittagong, far round the eastern corner of the Bay of Bengal, at the same moment in Rajshaky, a central district lying east of the Ganges, and not a week afterwards in the high and distant tracts of Bhaugulpore and Monghyr.

On the 28th of August, it was reported to the government that a malignant species of cholera had appeared at Jessore, and was cutting off from twenty to thirty persons daily. It was stated in the report, that "the inhabitants astonished and terrified at the unaccountable and very destructive inroads of the pestilence, are flying in crowds to the country, as the only means of escaping impending death."‡ In the short space of a few weeks it destroyed upwards of six thousand persons.

The exact date of the appearance of the disease in Calcutta, has not been ascertained, but there appears no doubt that many cases occurred among the native population as early as the middle of Au-

\* Bell, p. 70.

† Bengal Report, p. xxi, ii.

‡ Idem, p. 3.

gust. At this time, however, the disease appears to have exhibited a mild type, but by the latter end of the month it assumed a malignant form, and during the first days of September it committed great havoc among the natives.

On the 5th of the month the disease appeared among the European inhabitants, and on the 15th, an official notification of the existence of cholera in Calcutta was forwarded to the government.

By the latter end of September the disease was prevailing throughout the whole province of Bengal, from the most easterly limits of Purnea, Dinagepore and Silhet, to the extreme borders of Balasore and Cuttack; and from the mouth of the Ganges nearly to the confluence of that river with the Jumna, a space of upwards of four hundred miles in length and breadth. In this area of several thousand miles, few places escaped the invasion, and the cities of Dacca and Patna, the towns of Balasore, Burrissaul, Rungpore, and Malda, suffered severely. The large and populous city of Mooshedabad, which, from extent and local position, was apparently favourably circumstanced for the attacks of the epidemic, it is remarkable, escaped with comparatively little loss, whilst all around was severely scourged.

During the autumn of 1817 the disease extended itself to Muzafferpore and beyond the precincts of Bengal, and appeared at Chuprah, and at the cantonment of Ghazeepore; its attacks in these places were, however, confined to the towns themselves, or villages in their immediate vicinity; the principal portion of the adjoining country, at this period, entirely escaping the disease. Early in November it attacked the grand army, then stationed at Bundleeund, a portion of the Allahabad province. This army had been assembled in anticipation of a war with the Pindarees, and the centre division consisting of ten thousand fighting men, and eighty thousand camp followers, was encamped on the banks of the Sinde, under the immediate command of the Marquis of Hastings. Here the cholera exercised its most destructive power. It is uncertain whether it made its first approaches on the 6th, 7th, or 8th of the month. After creeping about, however, in its wonted insidious manner for several days among the camp followers, it seemed all at once to have gained vigour, and burst forth with irresistible violence in every direction, extending through the whole camp before the 14th of the month. Old and young, European and native, fighting men and camp followers, were alike subject to its attacks, and all equally sunk in a few hours under its pestilential influence. It was a common occurrence for sentries to be

suddenly seized at their posts, and having been carried in to have two or three successors before the two hours duty was performed. Many of the sick died before reaching the hospitals; and even their comrades, whilst bearing them from out-posts to medical aid, sunk themselves suddenly seized with the disorder. The mortality at length became so great that there was neither time nor hands to carry off the bodies, which were thrown into the neighbouring ravines, or hastily committed to the earth on the spots where they had expired, and even round the walls of the officers tents. In the five days included between the 15th and 20th of November, the number of deaths amounted to five thousand. The natives thinking their only safety lay in flight, deserted in great numbers; and the highways and fields for many miles round were strewed with the bodies of those who had left the camp with the disease upon them, and speedily sank under its exhausting influence. The camp being now cumbered with the sick, the Marquis of Hastings determined to seek a purer air for the recovery of his sick. Although every means was put in requisition for their removal, a part was necessarily left behind. "And as many who left the carts, pressed by the sudden calls of the disease, were unable to rise again, and hundreds dropped down during every subsequent day's advance, and covered the roads with dead and dying; the ground of encampment, and line of march, presented the appearance of a field of battle, and of the track of an army retreating under every circumstance of discomfiture and distress." The exact mortality could not be ascertained, but it appears that of the fighting men seven hundred and sixty-four fell victims, and it was estimated that about eight thousand camp followers, or one-tenth of the whole, were cut off. On arriving at the high and dry banks of the Betwah at Erich, the army soon got rid of the pestilence, and met with returning health.

During December, the disease appears to have every where abated, and in January of 1818, it was nearly extinct. Towards the latter end of February it however again revived with great force, and displayed those remarkable characters which have since distinguished it. Our limits will not permit, nor indeed would it be altogether interesting, to follow minutely the history of the disease in its subsequent march; all that we shall attempt at present will be to indicate its general course, although we may hereafter have occasion to notice some of the particulars of its progress, when considering the manner in which it extended itself.

• Bengal Report, p. 12-15.

Tracing the disease south from the province of Bengal, we find it prevailing at Ganjam in March, 1818, at Madras in October, and at Trincomalee, in the Isle of Ceylon, in December. It reached Palameotta and Trivanderam, near the southernmost part of the Peninsula, in January of the following year, in November, Mauritius, and in January, 1820, the Isle of Bourbon.

Following next its eastern route, we find it to have appeared in Arracan in 1818; at Penang, Bankok, Acheem in Sumatra, and at Samarang in Java, in 1819; at Manilla, Canton, &c. in 1820; and in 1821, it entered Pekin, where it prevailed during that and the two following years. By the latter end of 1823, it had traversed the Molucca or Spice Islands, including the Isle of Timor, near to New Holland, where it appears to have attained its south-eastern limits.

In its extension to the westward, the pestilence reached the Island of Bombay in August, 1818. In June, 1821, it entered Muscat, and then ascended the Persian Gulf, visiting the sea-port towns on either side. Extending inland, it spread from Busheer, through Persia, and from Bassora through Asiatic Turkey. In its latter route it reached Bagdad in 1821, Mosul, Tauris, &c. in 1822, and before the autumn of 1823, it had extended to Antioch, Diarberk, Erzeroum, &c., threatening on the one hand to extend through Turkey into Europe, and on the other through Arabia into Egypt; it suddenly however stopped in its course, and at that time proceeded no further in those directions.

In its progress through Persia, the first place of note that suffered was Shiraz, where it broke out about the middle of September, 1821. Passing by Ispahan, the disease next appeared at Yezd, but in October it broke out in the former city, where its ravages were soon arrested by the cold season. The following spring, however, it revived with renewed force, and by the close of 1822, almost every place of note in Persia had been traversed by the pestilence, and during the following year the few places that had hitherto escaped were visited. In August, 1823, the province of Shirvan was invaded. and after traversing Baku and other ports on the western border of the Caspian sea, it reached in September, Astracan, near the mouth of the Volga, and threatened Europe also in this direction; but after prevailing until the rigour of winter, it here likewise died away, and relieved Europe for the time from the impending danger.

We have but little knowledge of the history of the pestilence during the succeeding six years. It is known to have reappeared in different parts of Persia for several years in succession, as was usually the case where it had once prevailed; and it is also said to have ravaged for some



years the interior of China, and to have passed to the north of the great wall and desolated several places in Mongolia, by 1827.

In the summer of 1829, the pestilence however appears all at once to have gained renewed force, prevailing with great violence in several parts of eastern Persia, more especially in the province of Kho-razan, and in various districts of Bueharia, particularly in Chirza, a city in the province of Kharazm, situated on the Jihon, a stream which falls from the south into the sea of Aral, and where some of the Bucharian caravans assemble previous to crossing the great Steppes of the Kirghis-Kaisaks. In August the disease reached Orenburg, the capital of the province of the same name, situated on the Tartar frontiers, four hundred miles north of the Caspian. From the official reports it appears that the first well-ascertained case of cholera at Orenburg, occurred on the 26th of August; a week afterwards a woman died suddenly, it was supposed from the same disease, and on the 8th of September, a joiner died after twelve hours illness. This last was unquestionably a case of cholera. On the 9th, two more cases occurred, on the 10th, two more, and after this it became rapidly prevalent. By the 20th of November it had entirely ceased. Out of a population of eleven thousand, eleven hundred were affected, of whom only two hundred died. No cases appear to have occurred in any other part of the Orenburg government until the 23d of September, when it broke out at the fortress of Rastupna, sixty miles west of Orenburg. On the 30th, cases occurred at Berdsk, a small station, twelve miles north of Orenburg, and by the middle of November, it had spread over a district of country of about two hundred miles square.\* From this period the disease abated, and by the latter part of February, 1830, was entirely extinct in the Russian dominions.

The following summer, however, it appeared in a different quarter [of the empire: viz. on the Persian frontier of Georgia. It has been ascertained that the disease prevailed in June in various places in the Persian province of Ghilan, and among others at Reshd, a sea-port town on the southern shores of the Caspian. From this it extended itself northward, along the western border of the Caspian, to Baku, another port, two hundred miles from Reshd, which it reached early in July, and north-westerly along the river Kur to Tiflis, the capital of Georgia, four hundred miles from Reshd, where it arrived on the 27th of July. In this latter city it attacked in ten days five hundred and seventy-nine persons, of whom two-

\* Die Asiatische Cholera in Russland, &c. Von Dr. J. R. Lichtenstadt. Berlin, 1831. pp. 218. 8vo.

hundred and thirty-seven perished. From Baku the disease proceeded along the Caspian, attacking various ports and adjacent towns, and on the 19th of July reached Astrachan, a town situated on an island in the principal mouth of the Volga, about thirty miles from the northern shore of the Caspian, and three hundred and fifty from Baku. Here in ten days twelve hundred and twenty-nine persons were seized, of whom four hundred and thirty-three died. From Astrachan it is represented as having spread along the Volga, reaching Taritzin, two hundred and twenty miles above Astrachan, by the 4th of August, and Saratov, two hundred miles further north on the 6th of the same month. Spreading west between Taritzin and Saratov, it invaded the country of the Don Kossacks, and extended to the government of Kiev, five hundred miles west of the Volga. In its progress north it spread across the country to Perza, one hundred and forty miles from Saratov, where it arrived on the 17th of August; on the 27th, it appeared at Samarov, a town on the Volga, two hundred miles north-east of Saratov; and by the latter end of the month it reached Nischnei-Novogorod. On the 9th of September it broke out at Kasan, two hundred miles *down* the Volga, and east of Nischnei-Novogorod, and about the same time at Kostroma, one hundred and fifty miles *up* the river, and north-west of Nischnei-Novogorod; about the middle of September it entered Moscow, two hundred and sixty miles from and a little to the south of Nischnei-Novogorod, and about the same time reached Twer and Vologda, not far from the sources of the Volga, thus traversing a distance from the Caspian of at least fifteen hundred miles in three months and a half.

Spreading to the south and south-west the following spring, it reached Warsaw about the middle of April, 1831, and Riga, Polangen, and Dantzic, ports on the Baltic, in May. By the middle of June it had spread north to St. Petersburg, and shortly afterwards broke out at Archangel, on the Dwina, near the White Sea. By the last of August it had spread south to Berlin, in the following month it entered Vienna, and on the 11th of October it broke out at Hamburgh. In October it appeared at Sunderland, on the eastern shores of England, and up to November 28th, two hundred and ninety-four cases had occurred, of which eighty-six had been fatal, and thirty-two remained under treatment.

Egypt, which in 1823, like Europe, was suddenly preserved from the pestilence that was advancing towards it, was not destined to enjoy a continued immunity. The renewed activity which the cholera acquired in 1829, enabled it to continue its south-eastern progress, and at the present period it is committing the most extensive ravages in

various parts of Arabia and Egypt. It broke out at Mecca about the commencement of May, 1831, at the period when the pilgrims from every part of the empire were collected there to visit the holy places.\*

The hasty sketch we have thus given of the geographical progress of cholera up to the present time, will enable our readers to perceive the extraordinary uniformity with which that pestilence has stalked from district to district and from kingdom to kingdom; a uniformity so great, as almost to permit the period of its arrival and the places which would be first attacked in a country, to be predicted.

Though on a great scale, however, travelling with remarkable regularity, the disease did not proceed in all directions without distinction or apparent choice, but exhibited extraordinary eccentricity at particular stages of its progress. It often seemed to affect certain lines, and to fix itself in particular divisions of country, sometimes appearing capriciously enough where it was not apprehended or expected, and in other instances following a path the direction of which could be traced with considerable accuracy. Sometimes it would "take a complete circle round a village, and leaving it untouched, pass on as it were, wholly to depart from the district. Then, after a lapse of weeks, or even months, it would suddenly return, and scarcely reappearing in the parts which had already undergone its ravages, would nearly depopulate the spot that had so lately congratulated itself on its escape. Sometimes, after running a long course on one side of the Ganges, it would, as if arrested by some unknown agent, stop at once, and taking a rapid sweep across the river, lay all waste on the opposite bank."† This description of the peculiarities of the disease in India, is applicable to it in every part of its subsequent progress.

It was not uncommon for the disease to be confined to particular portions of barracks or camps, or even to one side of a street; or for one or two tents in an encampment to be entirely exempt. In 1819, the disease commenced in the eastern wing of the barracks of the king's fourteenth regiment, and extended in a westerly direction, but suddenly stopped at the ninth company; the light infantry escaped with one or two slight cases only.‡ It is stated in the Bombay report that two cavalry regiments in a camp were altogether exempt from the disease, while all the other regiments were attacked.

It is not the least remarkable anomaly presented by this strange pestilence, that after pursuing its rapid progress to the very confines

\* Letter from the French consul general in Egypt. *Gazette Médicale*, Sept. 17, 1831.

† Bombay Report.

‡ Bengal Report, p. 113.

of Egypt and of Russia, it should all at once lose its power of extension to those countries, and although raging on their very borders, not pass them until seven or eight years afterwards.

At times, it seemed to avoid high and mountainous tracts, whilst at others they enjoyed no immunity from its attacks. Thus it wholly avoided Kumaon, the hilly districts north of Hurdwar, and the elevated stony belt which girts in the Rajpootana states to the north-west, but it subsequently passed the lofty range of mountains guarding Napaul, to the east, and in the government of Orenburg, it attacked villages fourteen hundred feet above the surrounding plain. Some cases occurred in a detachment of the seventh native infantry, on duty in the garrison of Jaragurh, a thousand feet above the plain; while the inhabitants of the town of Ajmeer, on the declivity, and at the base of the hill escaped.\* It always exhibited, however, a marked partiality for low, damp places, with crowded populations, and there constantly exhibited its most destructive powers. Thus Jessore, where the disease first prevailed with the greatest violence, is a crowded, dirty, ill-ventilated place, surrounded by a thick jungle, and exposed, during the rains, to the effluvia of an immense quantity of stagnant water. The district of which it is the capital, in its southern quarter, is composed of the Sunderbunds, a name given to numerous, low, marshy islands, contained in the Delta of the Ganges, and formed by the different channels through which that river travels to the ocean. The Sunderbunds are overgrown with wood, and inhabited only by tigers, reptiles, and such other denizens of the wilderness.†

The native town of Calcutta, in which the disease broke out, contains, in connexion with the suburbs, at least five hundred thousand inhabitants.

"It is chiefly composed," says Mr. Kennedy, "of miserable lanes, narrow, dirty, and unpaved; and the majority of the dwellings are low huts, with side-walls built of mud, mats, and bamboos, and covered with small tiles. Amongst the swarming population of these filthy receptacles, in which all descriptions of disgusting animal and vegetable odours abound, the distemper ran a long and wide career of destruction. Barely existing on a meagre diet of bad rice, the poor workmen, who had been abroad all day pursuing their laborious avocations in the sun, returned to their hovels in the most fitting state of body to contract the disease. Exhausted by the heat and fatigue, and confined during the night with their families, often six or eight in number, in a small space to which fresh air was a stranger, they were attacked by cholera in hundreds; and a frightful proportion of those attacked were swept away in the lapse of a few hours. This was more especially the case in the lowest part of the town and

\* Bengal Report, p. 302.

† Kennedy, p. 20.

suburbs, and in the adjacent villages of Kidderpore, Manicktolla, Entally, Chitpore, Sealdah, &c. The condition, indeed, of the inhabitants of the latter places, is hardly to be imagined. These villages are made up of mud or straw huts, which are individually from six to twelve feet square, and so huddled together, that there is scarcely room to pass between them. In each of these unhealthy habitations a whole family resides, and, not unfrequently, cows and other domestic animals are added to the proper inmates. These dependencies, moreover, are every where intersected by pools, broad ditches, and channels, which, in the rainy season, become the reservoirs of foul water and corrupt weeds." p. 23, 4.

Every where indeed the disease not only showed a partiality for towns of this description, but it often was restricted to those portions of cities which were dirty and crowded. The Banians, or merchants of the town of Guntoor, whose dwellings occupy a wide dry street, almost entirely escaped the disease, while the Brahmins, who inhabit a close damp alley, suffered in as great a proportion as any other class of people.\* Argrah, an airy, open, clean town, was comparatively healthy, whilst Multra, a filthy place, with crowded bazars, was severely scourged.† In Tripoli, a very clean and well ventilated town in Syria, with a population of upwards of fifteen thousand, only thirty-one were attacked, of whom five died, and the disease prevailed for only a few days; whilst at Antioch and Gesra, low and badly aired towns, it continued for a month and committed frightful ravages. Innumerable other similar cases might be adduced, were it necessary, but we will not fatigue the patience of our readers by detailing them.

Filth and deficiency of ventilation are incontestably among the circumstances which most favour the ravages of this disease. In addition we may notice as the most common predisposing or exciting causes of the pestilence, the immoderate use of intoxicating liquors or excesses of eating of any kind, especially of sour and unripe fruits, low living and unwholesome diet, cold drinks when the body is overheated, fatigue, exposure to cold and the sudden suppression of the cutaneous exhalation, sleeping on the ground or in low ill-ventilated apartments, or in the open air, depressing passions, fear of the disease, &c.

We have seen that exposure to atmospheric vicissitudes and fatigue were the exciting causes of the disease, when it occurred in the detachment under the command of Colonel Pearse, also in that of Colonel Cockerel, and that it likewise produced the cholera at Hurdwar. Abundant proof can be furnished that these same causes and those we have just indicated are active at the present mo-

\* Madras Report.

† Bengal Report, p. 115.

ment, when the disease has assumed an epidemic character. Mr. Taylor in his report, states that at Bombay the disease was nearly restricted to that class of the population which was most exposed to the severest labour and privation.\* In Mauritius, according to Mr. Corbin, by far the greater proportion of the seizures took place in the laborious classes of the population.†

"Of all the circumstances," says Mr. Kennedy, "predisposing to an attack of cholera, fatigue consequent to travelling, or to hard work in the open air, was the most powerful. Accordingly we find that troops upon the line of march, and people whose occupations exposed them to the weather—as boatmen, fishermen, hushandmen, gardeners, grass-cutters, washermen, palankeen-bearers—were extremely subject to the disease." p. 223.

"During the early progress of the cholera, large bodies of troops, though in good health previously, seldom performed a march in Hindostan without being attacked." p. 248.

MM. E. Le Gallois and E. Brière de Boiment state that the individuals attacked by this pestilence at Warsaw, generally belonged to the lowest class.‡ Their condition was miserable, their wants extreme. Their nourishment was bad and very indigestible, their houses filthy and ill-ventilated. Drunkards, debauchees, all those who committed excesses, those exhausted by diseases, the weak and aged, succumbed in a short time. Three drunkards after an orgie perished in the space of four hours, and a drunken servant in the hotel where MM. G. and B. lodged was found dead in his bed.§

Dr. Gibbs says that at St. Petersburg the disease could in almost all cases be traced to eating flatulent and crude vegetables, as cucumbers, melons, radishes, &c. of which the Russians are so fond; the use of ardent spirits, and afterwards drinking iced water, or quass, their common beverage, well-iced, and this during perspiration.||

The rapidity with which it often destroyed its victims is one of the remarkable characters of cholera, in some cases extinguishing life with almost the rapidity of lightning. At Bellamy, in India, a tailor attacked with the disease whilst engaged at his trade, is said to have instantly expired with his work in his hands, and in the very attitude in which he was sitting. A merchant, whilst in the act of closing a bargain for some tubs of sugar-candy, was suddenly seized, vomited twice, and expired. At Mecca the invasion of the disease was almost instantaneous. Individuals in perfect health were stricken to the earth, vomited, became cold, and died on the spot.¶

\* Kennedy, p. 73.

† Med. Chir. Trans. Vol. XI. p. 148.

‡ It was the same in Moscow, according to Dr. Jaehniehen.

§ Gaz. Med. July 8, 1831.

|| Ed. Med. and Surg. Journ. April, 1831.

¶ Letter from the French Consul General in Egypt. l. c.

It does not, however, usually terminate fatally in less than from six to twenty hours, and not unfrequently it runs a longer course.

The estimates which have been formed of the total mortality that has attended this scourge, rest upon data too vague to permit us to place any great reliance upon them; yet the supposition that it has destroyed upwards of fifty millions of human beings within the last fifteen years, awful as such a mortality certainly is, seems not to be altogether incredible, when we consider the great fatality that has sometimes attended it. We have seen that in a few weeks it destroyed at Jessore six thousand persons; at Allahabad it numbered ten thousand victims; in Mysore the same number; at Benares fifteen hundred perished in two months; and in the district of Gorreapokore thirty thousand died in half that time. In Java it is said to have destroyed one hundred and two thousand; in Bankok, Isle of Siam, forty thousand; in Pekin the mortality was so great in 1822 that the government was compelled to bury the dead. At Bassora it numbered eighteen thousand victims, of whom fourteen thousand died in two weeks, out of a population of sixty thousand; in Moscat, and its environs, it destroyed sixty thousand; at Mecca, in 1831, twenty thousand pilgrims perished.

We have not sufficient data to enable us to ascertain its comparative mortality; indeed it has exhibited great variety in this point; at times its fatality being extreme, at others scarcely greater than ordinary fevers. Thus, the family of a wealthy Nair, in Travancore, consisting of nineteen persons, were all, save one, cut off by it in a few hours. Another family of five all died. Mr. Searle stated that at Manantoddy of twenty-eight villagers attacked with it twenty-six died.\* We have seen that it decimated the Marquis of Hastings' army. At Mecca, of fifty thousand pilgrims assembled there last May, twenty thousand perished. In the city and suburbs of Orenburg, containing eleven thousand inhabitants, eleven hundred were attacked, of whom two hundred died. At Moscow the mortality varied greatly at different periods, being at first as high as nine-tenths of the cases, afterwards it gradually sunk to a half, and at last to a third. At Vienna, where the disease appeared in September, out of a population of three hundred and twenty thousand only one thousand three hundred and sixty had died up to the 24th of October. In Berlin and Ham-burgh the proportional mortality is said to have been less.

The rate of travel of the disease over the countries it has visited has not been every where the same, but has been influenced by circumstances not as yet ascertained. Thus it was from the 20th

\* Madras Report.

of March to the 14th of November, in its passage from Ganjam, latitude  $19^{\circ} 20'$ , to Cuddalore, latitude  $11^{\circ}$ , travelling the distance at the rate of rather more than two miles a day. It traversed the peninsula of India east to west, from the Bay of Bengal to the Bay of Cambay, a distance of thirteen hundred miles, in one year, being at the rate of nearly four miles a day. From the south of the Caspian, along the Volga to 'Twer, a distance of upwards of fifteen hundred miles, it passed in two months and a half, or at the rate of more than fourteen miles a day.

Traversing, as we have seen that the disease has done, through various countries between the latitudes of  $20^{\circ}$  south and  $65^{\circ}$  north of the equator, and in longitudes through upwards of  $100^{\circ}$ , it must necessarily have encountered every variety of climate, without its powers of spreading being destroyed. Nevertheless, cold seems always to have impeded and generally to have arrested its march. The only striking exception to this rule is its prevalence in Russia during the depth of winter, and this exception, according to Lichtenstadt, is more apparent than real, at least in Moscow, since he says it attacked those only who lived in hot stove rooms, and enveloped in furs, were always in an atmosphere of summer temperature.

Another fact in the history of this disease must not be overlooked; it is the shortness of its visitations. When appearing in a town or among a large assemblage of persons, it spread with extreme rapidity, and in general ran its course in the space of a few weeks, and then disappeared. It did not, however, entirely die away. Once in possession of a soil, it generally took root there, and only waited for some favourable opportunity to germinate afresh. Thus Calcutta has suffered from it every summer since its first appearance in 1817; Bombay has been invaded by it twelve times; and at the moment we are writing this, we learn by an arrival from India, that it had broke out on the 5th of June last at Benares, a large town on the Ganges, and has been raging since then with extreme violence.

Cholera, we have seen, has always been endemic in India, and suddenly acquired, in 1817, an epidemic character. The causes which invested it with this character seem to be still a mystery. Indeed, the origin of most general pestilences is as yet an unsolved problem in medical science. They have usually, however, been preceded by some unusual atmospheric phenomena, and the one under consideration forms no exception to such a rule. It is indeed said by Dr. JOHNSON, in his work on the diseases of India,\* that the cholera com-

\* Fourth ed. p. 275.



menced without any previous peculiarities in the weather, and this statement has been repeated by many subsequent writers. Dr. HAWKINS gives it as a generally admitted fact. This is, nevertheless, the very opposite to the truth. Dr. Jameson and Mr. Annesley, both of whom had the most ample means of obtaining information, assert that the seasons preceding the appearance of the epidemic were unusually disturbed, and remarkable for atmospheric vicissitudes. Mr. SCOTT, in his Madras report, also speaks of the marked intemperature of the seasons preceding and accompanying the appearance of the disease.\* It appears from Dr. Jameson's Bengal report, that for some years before the epidemic cholera made its appearance, there had been excessive heavy rains, great droughts, storms, and earthquakes. During the rainy season of 1815, the fall of rain was excessive; the Ganges, the Soane, and Coossee rivers burst their boundaries, producing great destruction. The cold season that followed was damp, unpleasant, and exceedingly foggy. On the other hand, the hot season of 1816 was distinguished for drought and intense heat, which was tempered with but few breezes and little or no rain. On the 15th of April a shock of an earthquake was felt at Calcutta. Towards the end of May, the thermometer had risen to the unusual height of 98° in the shade; and under the effects of this oppressive heat many persons, European and native, fell down dead in the streets. This dreadful sultry weather continued, until interrupted on the 14th of June by the commencement of the rains. During the remainder of June and during July there were moderate rains, and a second shock of an earthquake was felt in the latter month. In August the showers became rare, and the days and nights oppressively hot; in Calcutta and in the western part of the province, the drought that succeeded was so uncommon as to dry up the rivers. On the 8th of September this drought was suddenly succeeded by a deluge of rain which continued throughout the month, and occasioned a deeper and more general inundation than had happened at any period within the recollection of the oldest inhabitants.

The morbid effects of this anomalous weather soon showed itself, and instead of the inflammatory affections which usually presented themselves, the only diseases met with were low fevers, and other disorders of the typhoid character; among others, the "malignant sore throat," hitherto unknown in that portion of the globe, except by name, made its appearance.

Bilious remittent fever soon became prevalent, and before the end

\* P. xlix.

of August was raging epidemically in almost every town between Patna and Saharempore, and continued to prevail until the cold weather in December. The disease attacked equally Europeans and natives, and the mortality was very great. Of numerous native villages the whole population was ill at one and the same time; the banks of the river were at all times covered with the dead and dying. The eighty-seventh and sixty-sixth regiments at Cawnpore lost nearly four hundred men; the former corps is said to have had five hundred and nineteen in hospital at once, and to have buried twenty-one persons. (including women and children,) in one day. In Upper Hindostan the horned cattle were very sickly, and their bodies in vast numbers were to be seen strewed in the pastures.

The ensuing cold season was raw, damp, and unpleasant.

The deviations from the ordinary course of the season, during 1817, were as marked as those of the preceding year. February, instead of being dry and cold, was very rainy, as was also March. On the 21st of the latter month, a violent thunderstorm was experienced followed by hail and torrents of rain, which destroyed the blossoms of all the mangoe and other trees then in bloom, and severely injured the spring crops. The thermometer ranged from 68 to 82°. Among the Europeans chronic dysentery and rheumatism were the prevailing complaints. On the 30th of the month a soldier of the fifty-ninth regiment at Fort William, Calcutta, was attacked with cholera, and died in thirty-six hours. No other case at that time occurred, and there was nothing observed remarkable in the weather, or the health of the population, until the 25th of May, when the rains commenced, which was fifteen or twenty days earlier than usual. In every part of the Gangetic Delta the descent of heavy rain was long and uninterrupted, and nearly the whole country, especially in the lower division of the province of Bengal, was one sheet of water before the middle of August. Lakes and tanks that in former seasons had remained nearly dry for a considerable time were now filled to overflowing, and remained so for a comparatively long period. The measure of the rain was estimated at one hundred and twenty inches, one-third more than the usual quantity.\*

Cholera, which has already been stated to be endemical in Bengal, and to prevail more or less at certain seasons, was of more common occurrence during the first six months of 1817, than in former years. It prevailed among the natives in an unusual degree in May and June in several parts of Nuddea and Momensing, and in other and distant

\* Bengal Report, p. xlii.—lvi.

parts of Bengal, between which there had been no immediate intercommunication. By the middle of August it had assumed an epidemic character, and before the last of September it was prevailing throughout the whole province of Bengal. During the cool weather of November and December the disease gradually died away, and became nearly extinct in January.

The succeeding year, (1818,) was similar to its predecessor. There were excessively heavy falls of rain, especially in the upper provinces, and sudden vicissitudes. On the 19th of February, the wind settled to the south and the hot season set in; on the 25th there was a north-wester, and on the 27th and 28th much rain. Immediately on the occurrence of this sudden change in the weather, the cholera revived and raged with indiscriminate violence among the natives; and at the end of the following July, it equally affected Europeans.

It has been supposed by some persons, that as it was during the wet season of the year, that the disease had been endemic; and as since becoming epidemic, its appearance has been influenced by the weather—breaking out in spring, abating in winter, and becoming aggravated by atmospheric vicissitudes—that these causes are sufficient to explain its occurrence, wherever it has prevailed. That the excessive rains and atmospheric variations we have noticed, were circumstances exceedingly favourable to the occurrence of the disease, is extremely probable; but whether they were sufficient to endow the disease with its epidemic character, may certainly be questioned.

The regular progress of the disease—its prevalence in every climate from 20° south latitude, to 65° north, alike in the tropical regions of India and the frozen regions of the White Sea—its appearance under every possible variety of season, heat, cold, dryness, and moisture; raging in Benares, Bundelkund, Oude, and the southern districts of the Doab during the dry months of the hot weather, whilst it did not appear in Delhi, in Meerut, or in Jeypore and the tracts in their vicinity, until the rains had set in, and the air was loaded with moisture; attacking, of five camps, the centre division in the cold season, the Nagpore and Saugur division in the height of the hot winds, and the Rajpootana and Kurnaul divisions whilst it poured down rain—and its occurrence equally in the low and marshy Delta of the Ganges, and on the dry and elevated plain of Orenburg, show that it cannot depend *solely* either upon heat or cold, dryness or moisture. The fact that atmospheric vicissitudes are among the common *exciting* causes of the disease, has no

doubt led to the error of ascribing its essential cause to sensible changes in the weather, but as these have always occurred without previously inducing the disease or even doing so at the present time,\* it is evident that we must look to something else as the means by which the disease is propagated.

This, according to a pretty numerous party, especially in England, is to be found in the existence of a specific contagion, generated in 1817. Those who are of opinion that the disease is propagated in this way, have offered various circumstances in support of their belief. They assert that the disease has always followed the highways of human intercourse, the great roads and navigable rivers, that it follows the track of armies and caravans, and that its importation from one place to another could often be directly traced. That bodies of troops in motion have been attacked and have retained the disease, while it was unknown to the fixed inhabitants of the country through which they passed, and that when it is once established in a marching regiment, it continues its course in spite of change of position, food, and other circumstances. That the relations who have attended on persons ill of cholera, as well as the nurses appointed in military hospitals for that duty, and in general those whose employment has led them to be much with the sick, have been observed in very many instances to be attacked with the disease, during or shortly

\* The Nagpore subsidiary force, whilst conducting the siege of Chandah, during which the troops were exposed to the great heats of the day under a range of stony hills, and often without shelter, to the dews of night, had not a case of the disease. On the 30th of May a detachment returned to Nagpore, where the disease was prevailing, and took possession of certain huts near the Sittabuldee hills, which they had formerly occupied. Though previously in good health, they had scarcely taken possession of their quarters when it appeared among them in a violent manner. The first day only one individual was affected; but on the 31st it appeared with great violence and fatality; on the 1st of June the attacks were very numerous; on the 2d it declined, and after the 10th rarely appeared. In a detachment of this force left at Ilungumghat, fifty miles south of Nagpore, it appeared at the same time, and followed the same course. The left division of the army had been almost constantly moving from the beginning of March, and in the latter part of that month, and the first week in April, had undergone great privations and fatigue whilst conducting a heavy train of artillery, and a numerous convoy of carts, in the cold of the night, and great heats of the day, through a mountainous and difficult country. Yet they felt nothing of the epidemic until they, on the 9th and 10th of April, reached Jubbulpore, in which town it had been raging several weeks; from which period they became numerous affected. So many similar cases have occurred that they can hardly perhaps be ascribed to mere coincidence. *Ben-gal Report*, p. 89.

after their attendance. That the sick in hospitals labouring under other diseases, have likewise been observed to be attacked with cholera, especially those who lay near patients ill with that disease. Mr. Hawkins\* says, that in India "the disease was *probably* communicated from one person to another, and that in Europe it has *undeniably* proved so." He further asserts, that insulation or separation from the sick, is almost universally found to preserve from the evil.†

This certainly presents a pretty strong *prima facie* case of contagion. But let us examine the alleged facts upon which these assertions have been based, and see whether they will bear investigation.

There appears always to have existed, among the inhabitants of every place, an unwillingness to believe that a pestilential disease could originate among themselves—such circumstance being considered as extremely disreputable, and hence attempts have always been made to trace its origin in, and importation from, some less favoured spot. Thus, in the case of yellow fever, for a long time the idea of its originating among ourselves was repelled with indignation, and its introduction attributed to importation from the West Indies. There appears, however, to have been no lack of this particular kind of *amor patriæ* in these latter islands; and their inhabitants have equally refused to admit its origin among themselves, and insist that it must have been imported from Africa. We know not what the poor African says on this subject, but have no doubt that its importation from some other place is equally satisfactory to him.

As regards cholera, the doctrine of importation was early resorted to to explain its appearance. Thus, it was at first said to have been imported into Calcutta and other places in Bengal from Jessore, until on investigation it was proved by the most conclusive testimony to have occurred nearly simultaneously in various parts of the province, between which there had been no immediate intercommunication. But let us examine into some of the special cases in which the importation, it is said, could be traced.

The disease was imported into Mauritius, say the contagionists, by the frigate *Topaze*, which sailed from Ceylon while the disease was raging there. The former island is distant upwards of two thousand miles from the latter, or from any place where cholera was prevailing at the time. On the passage seventeen cases of cholera appeared on board the *Topaze*. "The frigate," says Mr. Kennedy, "arrived in the harbour of Port Louis, the 29th of October, 1819, and it was not until the 18th of November that the cholera began to

\* P. 165.

† P. 151.

spread among the inhabitants. The people, therefore, were naturally led to suspect that the malignant form of the disease had been imported by the *Topaze*.\* The public opinion will hardly be admitted as proof in this case, especially as it is in direct variance with that of the medical officer. It appears, from the report of Dr. KINGS,<sup>†</sup> that a case of cholera occurred on the 5th of September, and another the following day, whilst the *Topaze* did not arrive until the 29th. That the thirty patients sent from the ship to the hospital were cases of chronic dysentery, hepatitis, and general debility. He further states, both on the authority of the surgeon of the ship, and from personal observation, that not one of these patients laboured under symptoms of cholera at the time of disembarkation, and that not a soul on board the *Topaze*, which lay about a mile and a half from the shore, but constantly communicated with it, was attacked after her arrival. The disease, moreover, did not break out among the nurses or the other patients in the hospital where these men were lodged, but among the African slaves and convicts. It was not, of course, conveyed into the town by the patients. If the clothes of the crew were imbued with the infection, as the contagionists assert, they should show that the disease broke out among those who visited the vessel, and explain how, of a whole frigate's crew, but seventeen should be affected; yet should convey the infection to others. We are not informed when the frigate left Ceylon, at what period of the voyage the disease occurred, when it ceased on board; nor are we furnished with many other important particulars to establish contagion. For even admitting that the disease first appeared on the 18th of November, twenty-one days after the arrival of the *Topaze*, it is far from following, that the disease was imported by that frigate; for it is pretty well proved, that the period at which the disease shows itself, after being exposed to the supposed virus, rarely, if ever, exceeds four or five days, and it is not contended, we believe, that the supposed infection can remain for a much longer time in garments.

It must then be admitted, that at least *no proof* of the disease being imported by the *Topaze* has as yet been adduced.

The story of the introduction of cholera into Astrachan is so vague that little can be said in relation to it. It is stated in the report of Dr. Solomov, that the disease first appeared on the frontiers of the Astrachan government on the 5d of July, on board of a ship of war which had arrived from Baku, (three hundred and fifty miles down the Caspian,) and lay *sixty miles from Astrachan*. Till the 20th of

\* Hawkins, p. 264.

the month the disease was confined within the Sedlitooski lazaretto, whither the vessel with the sick had been brought. But on that day four people were taken ill in the city, near the river Kutum, and from this point the disease *imperceptibly* spread over the whole towon.\* Now there is certainly nothing, so far, to prove that the disease had been imported, and here the relation stops, without even the attempt to show that the slightest intercourse took place between the individuals simultaneously attacked and the sick at the lazaretto; indeed we have no information furnished us of their having ever been nearer than within sixty miles of each other.

After a careful investigation of the supposed introduction of the disease into Orenburg by the caravans which arrive from Central Asia about midsummer, it was found impossible to attach any plausibility to that notion. The last caravan that arrived at Orenburg, reached that place on the 22d of July, thirty-five days before the first case of cholera occurred there; the individuals composing it were all in good health, and in crossing the steppes, which is accomplished in from thirty-three to ninety days, they lost only one companion, whose disease could not be ascertained, but who died after being twenty days ill, and therefore it could not have been of cholera. Now it is entirely admitted by the contagionists, that the period at which the disease occurs after exposure rarely exceeds three days,† and that at most it does not exceed a week. It is consequently entirely clear that the disease could not have been introduced by the persons belonging to the caravan. It is scarcely less certain that it could not have been introduced by the goods conveyed by them; since at every resting place it is the practice of the merchants to unpack their merchandise, so that they must have been freely exposed to the fomites had there been any; yet none of them were taken ill. Besides, the Bucharian merchants and their attendants, laughing at the suspicions of the physicians, exposed themselves in every possible way to the exhalations from their packages. Neither could it be discovered that any person in Orenburg was attacked by the cholera, who had purchased goods of a suspected nature brought by the caravan. When to these facts it is added that the cholera did not appear at Orsk or Troitsk, two other frontier towns, where the eastern caravans also arrive during summer, it is evident that importation in this manner is out of the question.‡

The introduction of the cholera at Orenburg was ascribed by some

\* Lichtenstadt.

† Kennedy, p. 215, 232.

‡ Edinburgh Medical and Surgical Journal, xxxvi. Lichtenstadt.

of the inhabitants to another source. They attributed it to the Kirghis-Kaisaks, from whom the government of Orenburg is separated merely by the river Oural. The following remarks of Dr. Sakolov on this subject appear conclusive:—

“Finally,” says he, “the introduction of cholera into Orenburg has been ascribed to our neighbours of the Steppes, the Kirghis. Their intercourse with Taschkent, Bucharia and Chiwa is well known; so that if the disease was introduced into any of these districts from Caubul or Khorasan, it must have been communicated to the Kirghis. Their own accounts, too, though discordant in many respects, supply clear, convincing proof that cholera has shown itself in some of their hordes on the Ileik and Emba, (the former of which streams joins the Oural from the south-west, a little below Orenburg, while the latter river runs parallel to the Oural at a distance of about eighty miles, and flows like it into the Caspian.) But their constant distrust of us, and their suspicious closeness are a great obstacle to our procuring distinct evidence of the form and extent in which the disease prevailed in this wandering semi-barbarous race.

“Besides, it is their constant custom to abandon all those to their fate who are sick or suspected to be ill, (for example, of small-pox, measles, or inflammatory fever,) and to wander to a distance from any place where such diseases have shown themselves,—which is in fact the most effectual means they could take to check their dissemination, and serves equally to lessen the number of victims, and to withdraw them from observation. Along our whole confines the Kirghis are constantly employed bartering goods with us during the summer and harvest, their principal articles of commerce being sheep, camblet, felt, and skins. But if the Chiwa and Bucharian caravans could not have introduced cholera into Orenburg, because it was actually never introduced into Orsk and Troitsk, how was it possible for the Kirghis to introduce it into Orenburg, without also introducing it into the numerous stations on the frontiers with which they maintain an equally constant intercourse?” p. 123.

Thus the notion that the disease was introduced into Orenburg by importation, appears utterly improbable; at least the strictest investigation has failed in discovering any thing that could favour such an opinion.

The disease, it has been said, was introduced into Riga in a package of hemp, and it is asserted that fifteen labourers who opened it were attacked with the complaint; others attribute the introduction to the barques.

The statement of fifteen labourers being attacked at Riga, while opening a pack of hemp, the British consul asserts to be a notorious falsehood. As to its introduction by the barques, let us hear what he says on that subject.

“It is impossible” he observes “to trace the origin of the disease to the barques; indeed it had not manifested itself at the place whence they come till after it had broken out here. The nearest point infected was Schowlen (at a distance of 200 wersts,) and it appeared simultaneously in three different places at Riga,



without touching the interjacent country. The first cases were two stone-masons, working in the Petersburg suburbs, a person in the citadel, and a lady resident in the town. None of these persons had had the slightest communication with the crews of barques, or other strangers, and the quarter inhabited by people of that description was later attacked, though it has ultimately suffered most."

The cholera was imported into Dantzic, say the contagionists, by a vessel from Riga, the captain of which ship died the day of his arrival; afterwards the cholera gradually extended itself first to the port, next to the suburbs, and subsequently to the city; and further to prove its contagious nature, it is added, that the neighbouring places have been preserved by a cordon sanitaire. This story, if true, would at once determine the question of contagion; and it appeared so important in relation to the settlement of that point, that Dr. DALMAS, a member of the medical commission, sent by the French government to Warsaw, determined to go himself to Riga to investigate the subject. In a letter to Dr. BLANDIN, published in the *Journal Universel et Hebdomadaire de Médecine et de Chirurgie Pratiques*, &c. for November last, Dr. Dalmas states, as the result of his investigations:—

"1st. That the cholera did not exist at Riga at the period of the sailing of the vessels accused of conveying the disease. 2d. That the cholera did not appear on board any of them during the voyage. 3d. That the cholera appeared at Dantzic before their arrival, and that it broke out in the town before it appeared in the port; and lastly, the cordon sanitaire did not protect the neighbouring places.

"It would occupy too much space," he adds, "to detail all the proofs of what I advance, but I will indicate them to you.

"It results from authentic documents, of which I have certified copies, that it was not until the 30th of May, that there arrived in the roads, loaded with articles for the Russian army, the first four ships, viz. the Minna, Captain Brandt; Joh. Maria, Captain Stoeck; Stoffmung, Captain Saag; Unga Neptunus, Captain Lilya. The two first were signalled the 30th of May, at 5 A. M. five leagues to the east. The captains were furnished with regular, clean bills of health. Finally the healthy state of their crews was ascertained in the most satisfactory manner by Dr. Mathy. On the other hand, after the most scrupulous researches, it has been proved that no other vessel or boat from Russian ports had arrived any where within the circle of Dantzic. In admitting, against all justice, that the bills of health and the report of the physician who visited these vessels are not to be depended on; as these four vessels are the first that appeared in the roads, it is impossible that the disease could have been imported before the 30th of May, the day on which it is true that Capt. Brandt died, after a few hours illness, probably from cholera, but which is not perfectly certain. But it is proved, officially avowed, demonstrated, that three cases of the disease occurred on the 27th of the month, on shore. These were three workmen on board a boat, engaged in cleaning out the port. Sent to their village, two of them died, one on the 25th, the other on the 31st of May; the third recovered. Their name, that of their village, and the other particulars are known.

"It is then certain that the cholera appeared on shore before the arrival of the first vessels. The cases just noticed are alone sufficient to prove it; but I go further, and say that the disease occurred previous to the 27th, and in the city moreover. To prove this, I have no official documents; but physicians, respectable from their learning, and entertaining different opinions respecting contagion, are unanimous on this point, that several days before the 27th, persons were attacked with cholera, in Dantzic. On the 21st, Dr. Baum received and prescribed in the hospital for a patient, who soon died. I have read the manuscript account of the case and post mortem examination; it was evidently a case of cholera. Drs. Geisler and Gnaschke have met with similar cases; finally, I have been positively assured, that in the early part of the week, ending the 28th, there were many cases of death after short illnesses, from causes respecting which the physicians were not at first agreed, when the cases of the 27th settled their opinions. The cholera then appeared first in the city.

"Another fact, still further disproving all idea of contagion from the goods imported from Russia is, that not one of the labourers employed in discharging one hundred and ten ships, which subsequently arrived, were affected.

"Finally, it is false that the cordon prevented the propagation of the disease to the environs; for it appeared many days before the cordon was removed, at Esling, Maricburg, Stutgard, and at Derschaw."

The importation then, by sea, adds Dr. Dalmas, is entirely fabulous.

MM. BRIERE DE BOISMONT and LEGALLOIS, were who sent to Russia by the Polish committee, give the following account of the first appearance of the cholera in Poland.

The disease, say they, made its first appearance in Poland on the 10th of April, 1831. It particularly affected the soldiers fatigued by painful marches, prolonged bivouacs, who were exposed to the tempestuousness of the seasons, and observed no hygienic rules. Thus it selected for its attacks the regiments which were encamped between two mountains upon a swampy prairie, and the soldiers of which had little else for food than pork. The days preceding the appearance of the malady were warm, the thermometer being 19° and 20° Ream.; the nights on the contrary, were cold and moist. After the battle of the 10th, at Iganie,\* which was long and bloody, the Poles, heated by a forced march, and the length of the action, greedily drank of the muddy water of this marsh, until they were gorged; and by the night of the 12th-13th, many of them had already expired.†

The reader may judge for himself how far importation is made out in this instance, and whether the appearance is not equally explicable by the theories presently to be discussed.

\* It should be mentioned that cholera prevailed among the Russian troops.

† Gazette Med. July 8th.

It must not be concealed that there are several other instances of importation related by different writers. Thus it is stated in the Bombay reports, that a man who left Panwell whilst the disease was raging there, had arrived at Bombay and was soon after attacked by the disease and died, and that on the day following his wife and the wife of the man, who lived next door, and almost immediately afterwards two near neighbours were affected, all of whom fell victims. Several cases afterwards occurred in the lane where these people had lived, and afterwards cases occurred in *different parts* of the town. Several cases of a similar kind are related in the Russian official documents. Thus it is said that a viutner's servant was attacked in the fortress of Raziipna, the day of his return from Orenburg, and that four days afterwards several of the garrison were affected. It is also stated that the disease first appeared in the fortress of Iletsk, soon after the arrival of a soldier and a soldier's wife, who were taken ill on their way from Orenburg, and died the day after their arrival at Iletsk. Three days afterwards three individuals were attacked in the garrison with the disease, one of whom was the husband of the woman.

It is impossible for us, remote as we are from the scene of these alleged occurrences, and a few others of a similar character which might be adduced, to disprove or confirm their accuracy. We can only say that, with scarcely a single exception, they are related in so loose a way, and are so deficient in important details, that they can hardly be received as evidence, much less as proofs of contagion. Moreover, in opposition to these, the contagionists adduce many instances, where the first cases which have occurred in a town are known, and in which it is impossible to trace its derivation from any external source. Thus in Moscow, where the police is remarkable for their activity, Dr. Jaehnichen informs us that the most minute and exact researches most incontestibly prove that the disease was not imported into that city, but that it developed itself spontaneously. Dr. WALKER, a believer in the contagious nature of the disease, confirms this. He states that, "a strict investigation had been made into what were considered the first four cases occurring in Moscow, and that it proved that they had neither themselves been in any infected place, nor had communication with any one coming from such place."\*

It has been equally impossible to trace its introduction into Sunderland. Mr. PENNMAN, the surgeon to the Sunderland Infirmary, in his letter to the American consul, states, "we have no evidence of

\* Hawkins, p. 249.

its being imported, and the prevailing opinion is, that it is not infectious." Dr. Brown, in a letter to Drs. Johnson and Tweedie, makes the same statement.

Let us now examine some of the other arguments which have been adduced in evidence of the contagiousness of the disease.

The disease it is said has often appeared to progress by the great roads and channels of human intercourse. This may be true, but it has not always done so. Surgeon MITCHELL, in his report from Palamcottah, says, "as far as I can learn, the cholera appears to have made its approaches by neither of the great roads. Commencing its ravages here to the eastward, a little north of the fort, it spread pretty generally through the small, low, dirty houses in every direction. The hospital seems to have escaped, probably because the building stood upon high and open ground."

It appears also that we cannot always trust to the accounts of the limitation of the disease to the great thoroughfares.

Mr. Bell observes, "when travelling on circuit, I have found the disease prevailing in a district *before any report had been made of the fact, notwithstanding the most positive orders on the subject*; and I am persuaded that were any of the instances adduced in support of the statement under consideration, strictly inquired into, it would be found that the usual apathy of the natives of India had prevented their noticing the existence of the disease, until the fact was brought prominently forward by the presence of Europeans. It should also be borne in mind, that cholera asphyxia is not a new disease to these natives, but seems to be in many places almost endemical; whilst it is well known, that strangers, in such circumstances, become more obnoxious to the disease than the inhabitants of the country. Moreover, travellers have, superadded to the remote causes of the disease, fatigue and road discomforts, which are not trifling in a country where there are neither inns nor carriages." p. 89.

But even if it be a fact that the disease is principally restricted to the high roads and navigable rivers, it is there that men collect in the largest masses, that we find the most crowded and filthy dwellings and the most wretchedness, in short, the situations most favourable for its production and the description of persons among whom the disease has always selected its greatest number of victims.

Where the disease appeared to follow the track of the various caravans, there is no mention made of the distemper having existed in these travelling communities, and it is admitted that had it prevailed among them it could not have been concealed from the European consuls, and that, therefore, the coincidence of the eruption of the malady, and the arrival of the caravan, must be accounted for on the only hypothesis left, namely, that the cholera was propagated by the goods which were transported from infected places. Now, this as-

sumes as a fact what is still to be proved, namely, that the supposed infection can be conveyed in goods. We have seen that the Bucharian merchants and their servants exposed themselves freely to the exhalations from their goods with impunity, and that it was impossible to trace the disease to any one who purchased goods of them at Orenburg, and no evidence has been offered to prove that elsewhere those who purchased goods imported by caravans were the first to be attacked with the disease.

In the report of the extraordinary committee of physicians assembled at Moscow, it is stated that eighteen members of the provisional medical council are of opinion that the cholera cannot be communicated by means of goods and merchandise, and that only three are in favour of it, and that the opinion of the minority destroy themselves—offering many contradictions, and not corresponding to known facts. And they further state, that “convalescents have continued to wear clothes which they wore during the disease, even furs without being purified, and they have never had a relapse.”\*

Dr. Albers, in his report to the Prussian government, says that it is completely made out by testimonies innumerable, “that the cholera is not communicated by articles of merchandise, or by any inanimate objects.”

Dr. Walker says that no cases have as yet come to his knowledge sufficient to prove the possibility of the disease being communicated by clothes or goods.

Finally, Dr. Smirnov informs us that the women who washed the clothes of the patients in the hospital at Orenburg, and who could hardly have escaped, were there any infection to be conveyed by such articles, were entirely exempt from the disease.†

If bodies of troops in motion have, as is asserted, been attacked with the disease whilst it was unknown to the fixed inhabitants of the country through which they passed, it seems not at all inexplicable, when we consider that they are exposed to the avowedly predisposing and exciting causes of the disease. But the following extract from Mr. Bell's Journal will show that the assertion in question rests on no very solid foundation.

“In July, 1819, I marched,” says Mr. Bell, “from Madras, in medical charge of a large party of young officers who had just arrived in India, and who were on their way to join regiments in the interior of the country. There was also a detachment of sepoys, and the usual numerous attendants and camp followers of such a party in India. The cholera prevailed at Madras when we left it. Until the fifth days' march, (fifty miles from Madras, no case of the disease occur-

\* Hawkins, p. 284.

† Lichtenstadt.

red. On that day several of the party were attacked on the line of march, and during the next three stages we continued to have additional cases. Cholera prevailed in the country through which we were passing. In consultation with the commanding officer of the detachment, it was determined that we should endeavour to leave the disease behind us; and as we were informed that the country beyond the Ghauts was free of it, we marched without a halt until we reached the high table land of Mysore. The consequence was, that we left the disease at Vellore, eighty-seven miles from Madras, and we had none of it until we had marched seventy miles farther, (seven stages,) when we again found it at one of our appointed places of encampment. But our camp was, in consequence pushed on a few miles, and only one case, a fatal one, occurred in the detachment. The man was attacked on the line of march. We again left the disease, and were free from it during the next hundred and fifteen miles of travelling. We then had it during three stages and found many villages deserted. We once more left it, and reached our journey's end, two hundred and sixty miles farther, without again meeting it. Thus, in a journey of five hundred and sixty miles, this detachment was exposed to, and left the disease behind, three different times, and on none of those occasions did a single case occur beyond the tainted spot." p. 90, 91.

The evidence adduced in favour of the infectious or contagious quality of cholera, as it respects the intercourse between individuals, is thus summed up by Mr. Scott in his Madras report, p. xlix.

"The relations who have attended on people ill of cholera, as well as the nurses appointed in military corps for that duty, and, in general, those whose employment has led them to be much with the sick, have been observed in very many instances, to be attacked with cholera, during or shortly after their attendance.

"The sick in hospital, labouring under other diseases, have likewise been observed to be attacked with cholera, especially those who lay near the patients ill with that disease. Sometimes whole families have been swept off successively. Servants have often been observed to sicken after attending their masters."

The whole current of medical testimony, however, goes to prove that the disease was not propagated from patients to their medical attendants, or to those who were previously in hospital, and labouring under other diseases.

It would be indeed strange if physicians and nurses, who from the extreme fatigue and loss of rest which they undergo, are peculiarly predisposed to the disease, did not sometimes become its victims; and it is therefore a remarkable fact that the proportion who were affected is so small.

Dr. Jameson states that of between two hundred and fifty and three hundred medical men engaged in practice in Bengal, but three took the disease.\* He further observes, that at Nagpore the medical

\* Bengal Report.

staff remained for several days, night and day, in the hospital, and yet all escaped.

At Bombay none of the hospital attendants were attacked, though they were assisting the patients day and night.\*

Surgeon JUKES, in his report, says, "neither myself, nor any of my assistants who have been constantly amongst the sick, nor any of the hospital attendants, have had the disease."†

In the hospital of the Royals, says the Madras report, only one individual, out of one hundred and one attendants, was attacked.

In the general hospital, it is stated, upon the authority of assistant surgeon WHYTE, that the friends and relations of the sick, who, by assisting the patients into and out of the bath, and every other way, were thereby exposed to be attacked by the disease were it communicable by touch, or through the medium of an infected atmosphere, in no instance were affected, neither were the dooly bearers nor hospital assistants.‡

Mr. Deputy Inspector FARRELL, in his report, states, that—

"It was observed that attendants on the sick, or persons resident in the same house, or even in the same ward of an hospital, with patients labouring under it, were not more liable to its attacks than others differently circumstanced. Indeed, it has been known to attack patients who had been admitted into hospital for other complaints, to have carried them off with its usual rapidity, and not to appear again in the same hospital, although it raged in all directions around it. These are strong facts, and if they do not disprove its contagious nature, they show, at all events, that it is propagated in a manner different from all known contagious diseases."§

At Berhampore none of the native attendants on the hospitals were affected.||

Dr. ALNERS, in his report to the Prussian government, says, that in Moscow—

"In many houses, it happened that one individual attacked by cholera was attended indiscriminately by all the relatives, and yet the disease did not spread to any of the inmates. It was finally found, that not only the nurses continued free from the distemper, but also that they promiscuously attended the sick chamber, and visited their friends without in the least communicating the disease. There are even cases fully authenticated, that nurses, to quiet timid females labouring under cholera, have shared their beds during the nights, and that they, notwithstanding, have escaped uninjured, in the same manner as physicians in hospitals have, without any bad consequence, made use of the warm water used a moment before by cholera patients for bathing."

\* Ogilvy's Report. Kennedy, p. 57.

† Med. Chirurg. Trans. xl. p. 143.

‡ Kennedy, p. 81.

§ Hawkins, p. 263.

|| Trans. Med. and Phys. Soc. of Calcutta, Vol. IV. p. 277 and 280.

Dr. Walker corroborates this statement.

Professor Lichtenstadt states on the authority of Dr. SMIRNOV, staff physician at Orenburg, that during two months while the disease prevailed at Orenburg, and two hundred and ninety-nine patients were admitted into the military hospital, the personal attendants on the sick remained entirely exempt from the disease.

In the principal hospital at Riga there were seventy-eight persons employed, of whom two only were attacked with the disease, one of them, an *inspecteur de salle*,<sup>1</sup> and not on immediate attendance on the sick.\*

M. CHAMBERET, one of the medical commission sent to Warsaw by the French government, stated to the royal academy of medicine, at their meeting on the 11th of October last, that of one hundred persons attached to the hospitals, one only had died.†

Mr. Scott adduces evidence to the same effect.

"The most striking instances of immunity from the disease, under the most intimate personal intercourse, will be found recorded in the original reports. In the hospital of the royal regiment, only one individual out of one hundred and one attendants was attacked with the disease. In that of the 11th native regiment at Vizianagram, as recited by Mr. M'Andrew, p. 33, not one was seized, although their numbers would seem to have been great. In the hospitals at Trichinopoly no attendants were taken ill. Many medical officers appear to have slept in their hospitals without suffering any bad consequences. At St. Thomas' Mount, where a general receiving hospital for patients with the cholera was established, and where the numerous attendants were people not at all accustomed to hospitals, not one of them was taken ill; yet it was not uncommon to see them using the bed-clothes of patients who had recovered or died. The same observation applies to the numerous receiving hospitals at Madras. Mr. Acting-surgeon Gibson, on reporting on a late attack, (April, 1823,) experienced by the 69th regiment at Wallahjabad, observes, I had ninety-two admissions, and increased the establishment of servants to double: I lived in the hospital amidst the sick day and night; and yet neither I myself nor any of the servants got the disease; but the hospital serjeant's wife, living in a retired room, not near any disease, had a severe attack."<sup>‡</sup>

The evidence to show that cholera patients have been introduced into crowded wards of hospitals, without that disease being communicated to the sick previously in the hospital, is equally conclusive.

Dr. Bell says that

"The military hospital at Dharwar, an oblong apartment of about ninety feet by twenty, was within the fort, and the lines of the garrison were

\* Report of British Consul at Riga.

† Gazette Médicale.

‡ Madras Report, p. 1.



about a mile distant, outside of the walls of the fort. On two different occasions, (in 1820 and 1821,) when the disease prevailed epidemically among the troops of that station, while I was in medical charge of the garrison, but while no cases had occurred in the fort in which the hospital was situated, the patients were brought at once from their quarters to the hospital, which on each occasion was crowded with sick labouring under other disorders. No attempt was made to separate the cholera patients from the others. On one of these occasions, no case of cholera occurred within the hospital; on the other, one of the sick was attacked, but he was a convalescent sepoy who had not been prevented from leaving the fort during the day. The disease on each of these occasions was confined to a particular subdivision of the lines, and none of those residing within the fort were attacked.

"Here then were from twenty to thirty cases of cholera admitted, in the course of a few days, into the same apartment with from forty to fifty patients suffering from other ailments, yet not a single instance to countenance the notion of contagion occurred."

Of one hundred and fifty patients previously in the hospital at Berrampore, one only took the complaint, viz. the assistant apothecary.\*

At Palamcotta, for want of room, the cholera patients were at first put among the other sick without infecting them.†

Dissections too, appear to have been made with perfect impunity. Dr. Jaehnichen says that he examined nearly fifty subjects who died of cholera, carefully inspecting the four cavities and often the course of the nerves and vessels, and that he and his assistants frequently wounded themselves without any ill consequences.‡ The same is stated by MM. Brière de Boismont and Legallois,§ and by the extraordinary committee of physicians assembled at Moscow.||

Dr. Foy, at Warsaw, inoculated himself with the blood of patients labouring under cholera, tasted their dejections, and inhaled their breaths without receiving the disease.¶

There appears indeed no direct evidence sufficient to prove that the disease was ever transmitted from one person to another by immediate communication. Dr. Walker himself, a contagionist, acknowledges that he could not learn that the contagionists in Moscow had any strong particular instances to prove the communication of the disease from one individual to another.\*\*

At Jaroslan the disease could not be traced from one to another, and very often, perhaps most frequently, only one in a family was attacked with it.††

\* Transactions of the Medical and Physical Society of Calcutta, p. 277-80.

† Kennedy, p. 113. ‡ Page 25. § Gazette Médicale, June 25, 1831.

|| Hawkins, p. 284. ¶ Gazette Médicale, June 25, 1831.

\*\* Hawkins, p. 250. †† Ibid, p. 251.

At Riga the illness of one individual in a family generally, was not followed by that of others, except where the first case was fatal, and the survivors gave way to grief and alarm and mental agitation, which has been proved to be one of the principal agents in propagating or exciting the disease. Mercenary attendants were rarely attacked.

In the cholera which prevailed in the 14th and 47th British regiments, at Berhampore, the soldiers, native servants, and inhabitants of the bazar, were affected, whilst the officers, the gentlemen residents, and sepoys assembled in the same cantonment, and promiscuously mixed together, were exempt.

We will not weary our readers with further evidence on these points, but proceed at once to the consideration of another argument which has been offered in favour of contagion, namely, the protection afforded by insulation.

As Dr. Hawkins has collected nearly all that has been adduced to prove the efficacy of insulation in protecting from the disease, and is himself a firm believer in its contagious nature, we will let him speak for himself on this point.

"Wherever measures," says he, "were taken to prevent communication in the Russian dominions, there the disease has been totally checked, or has made but little progress. Petersburg has not escaped, because a strict quarantine has not been observed between it and Moscow. The Moravian colony on the right bank of the Volga, and several German colonies in the government of Sator, around which the disease was violent, adopted the system of exclusion, and were also unhurt. At Caramala-Gubeewa, some Russian peasants, living together, scarcely a hundred yards from the village, shut up their hamlet on the first report of the disease having appeared in their vicinity, and by enforcing a strict quarantine during the prevalence of the epidemic, remained in health. The large establishment composing the academy of military cadets, at Moscow, was preserved by a similar plan from the scourge which was so active on all sides of it.

"Can we have a better proof of the contagious nature of the disease than that *insulation*, or separation from the sick, is almost universally found to preserve from the evil? Mr. Gomba, the French Consul at Teflis, in Persia, a person who probably was not devoted to any medical theory, writes to Baron Larrey, that the best and most sure mode of escaping from the calamity is *insulation and a residence in the mountains*. Of nine medical practitioners who were living at Teflis at the time of the invasion of the epidemic, four died during the first few days.

"Let us hear the history of Mr. de Lesseps, the Consul of France at Aleppo, an individual who probably has never interfered in medical discussions. When the cholera approached that city in 1822, this gentleman retired, in company with all who wished to be of his party, to a garden at some distance from the city. His asylum was enclosed with walls, and was surrounded by a large fossé:

there were only two doors, one for entrance, the other for going out. As long as the malady lasted, he admitted nothing from out of doors without submitting it to the precautions observed in lazarettoes. His colony comprised *two hundred* persons, and consisted not only of Franks more or less acclimatised, but also of several natives. *Not a single individual contracted the disease*; while, at the very same time, within the city, four thousand beings perished in the space of eighteen days.\*

"At Dantzic we find that the disease has prevailed for several weeks, *having probably been first imported by sea*. It has not extended from Dantzic to any of the neighbouring towns or districts of Prussia. The Prussian government enforces a very strict quarantine." p. 150-3.

If Dr. Hawkins intended to rest the doctrine of contagion upon the efficacy of the measures taken in Russia to check the extension of the disease, the point is now settled; since the disease has every where extended, and the government have withdrawn all the cordons sanitaires, acknowledging at the same time the inefficiency of these measures, and that there was no material part of the empire any longer to preserve. We have already seen that Dr. H. has been equally hasty in his confidence in the preservative powers of the strict Prussian quarantine; the disease extended from Dantzic to Elbing, Marienburg, Stargard, and Derschaw, and Prussia, like Russia, found these cordons wholly ineffectual. Indeed, if there is any thing settled in relation to cholera, it is as we shall presently see, the utter inefficacy of cordons sanitaires.

If certain insulated places have not been invaded by cholera, the same has happened to those which were not insulated. There is a small town in the Palatinate of Kalisch, which was constantly preserved from the disease, though surrounded by no cordon, and all the neighbouring places were affected; moreover, it received every day Russian families who fled from places where the epidemic raged.

"It is a well known fact," says Mr. Annesley, "that in the very centre of extensive districts, ravaged by cholera, there are certain narrow strips or patches of country, into which there existed no natural obstacles to the extension of the disease, but into which it never penetrated, although all around was one scene of desolation." p. 128.

Moreover, if insulation has appeared to protect against the disease, many cases might be adduced, in which this measure was ineffectual. The entire insulation of some persons and whole families at Moscow, says Dr. Jaehnichen, during the invasion of cholera, did not always preserve them from its influence; and according to the report of the British consul at Riga, the same was observed at this latter place. It

\* P. F. Kerandren, *Mémoire sur le Choléra Morbus de l'Iode*. Paris, 1831.

At Riga the illness of one individual in a family generally, was not followed by that of others, except where the first case was fatal, and the survivors gave way to grief and alarm and mental agitation, which has been proved to be one of the principal agents in propagating or exciting the disease. Merceuary attendants were rarely attacked.

In the cholera which prevailed in the 14th and 47th British regiments, at Berhampore, the soldiers, native servants, and inhabitants of the bazar, were affected, whilst the officers, the gentlemen residents, and sepoy's assembled in the same cantonment, and promiscuously mixed together, were exempt.

We will not weary our readers with further evidence on these points, but proceed at once to the consideration of another argument which has been offered in favour of contagion, namely, the protection afforded by insulation.

As Dr. Hawkins has collected nearly all that has been adduced to prove the efficacy of insulation in protecting from the disease, and is himself a firm believer in its contagious nature, we will let him speak for himself on this point.

"Wherever measures," says he, "were taken to prevent communication in the Russian dominions, there the disease has been totally checked, or has made but little progress. Petersburg has not escaped, because a strict quarantine has not been observed between it and Moscow. The Moravian colony on the right bank of the Volga, and several German colonies in the government of Sator, around which the disease was violent, adopted the system of exclusion, and were also unhurt. At Caramala-Gubeewa, some Russian peasants, living together, scarcely a hundred yards from the village, shut up their hamlet on the first report of the disease having appeared in their vicinity, and by enforcing a strict quarantine during the prevalence of the epidemic, remained in health. The large establishment composing the academy of military cadets, at Moscow, was preserved by a similar plan from the scourge which was so active on all sides of it.

"Can we have a better proof of the contagious nature of the disease than that *insulation*, or separation from the sick, is almost universally found to preserve from the evil? Mr. Gomba, the French Consul at Teflis, in Persia, a person who probably was not devoted to any medical theory, writes to Baron Larrey, that the best and most sure mode of escaping from the calamity is *insulation and a residence in the mountains*. Of nine medical practitioners who were living at Teflis at the time of the invasion of the epidemic, four died during the first few days.

"Let us hear the history of Mr. de Lesseps, the Consul of France at Aleppo, an individual who probably has never interfered in medical discussions. When the cholera approached that city in 1822, this gentleman retired, in company with all who wished to be of his party, to a garden at some distance from the city. His asylum was enclosed with walls, and was surrounded by a large fossé:

there were only two doors, one for entrance, the other for going out. As long as the malady lasted, he admitted nothing from out of doors without submitting it to the precautions observed in lazarettoes. His colony comprised *two hundred* persons, and consisted not only of Franks more or less acclimatised, but also of several natives. *Not a single individual contracted the disease*; while, at the very same time, within the city, four thousand beings perished in the space of eighteen days.\*

"At Dantzic we find that the disease has prevailed for several weeks, *having probably been first imported by sea*. It has not extended from Dantzic to any of the neighbouring towns or districts of Prussia. The Prussian government enforces a very strict quarantine." p. 150-3.

If Dr. Hawkins intended to rest the doctrine of contagion upon the efficacy of the measures taken in Russia to check the extension of the disease, the point is now settled; since the disease has every where extended, and the government have withdrawn all the cordons sanitaires, acknowledging at the same time the inefficiency of these measures, and that there was no material part of the empire any longer to preserve. We have already seen that Dr. H. has been equally hasty in his confidence in the preservative powers of the strict Prussian quarantine; the disease extended from Dantzic to Elbing, Marienburg, Stargard, and Derschaw, and Prussia, like Russia, found these cordons wholly ineffectual. Indeed, if there is any thing settled in relation to cholera, it is as we shall presently see, the utter inefficacy of cordons sanitaires.

If certain insulated places have not been invaded by cholera, the same has happened to those which were not insulated. There is a small town in the Palatinate of Kalisch, which was constantly preserved from the disease, though surrounded by no cordon, and all the neighbouring places were affected; moreover, it received every day Russian families who fled from places where the epidemic raged.

"It is a well known fact," says Mr. Annesley, "that in the very centre of extensive districts, ravaged by cholera, there are certain narrow strips or patches of country, into which there existed no natural obstacles to the extension of the disease, but into which it never penetrated, although all around was one scene of desolation." p. 128.

Moreover, if insulation has appeared to protect against the disease, many cases might be adduced, in which this measure was ineffectual. The entire insulation of some persons and whole families at Moscow, says Dr. Jauchniczen, during the invasion of cholera, did not always preserve them from its influence; and according to the report of the British consul at Riga, the same was observed at this latter place. It

\* P. F. Kerandren, *Mémoire sur le Choléra Morbus de l'Inde*. Paris, 1831.

is stated in the Madras report, that at Masulipatam, a town on the Coromandel coast, the disease first appeared among the convicts confined in the fort, and that it was not until about ten days afterwards, (July 10th, 1818,) that it was observed in the town and neighbourhood. A patient of Dr. Ginns, in the naval hospital of St. Petersburg, who had been there for a month, was attacked and died on the fourth day. No other person in hospital was attacked before or subsequently.\*

The Russian sanitary cordons have not preserved either Moscow or St. Petersburg; the sanitary laws of Prussia which were executed with a punctuality and rigour elsewhere unknown, have not preserved Berlin, whilst Thorn, in constant intercourse with Warsaw and Dantzic, enjoys an immunity from the pestilence.†

Further, the disease has occurred in ships at sea, and has attacked officers in their boats on the Ganges, far from any source of contagion. On the 28th of July, 1822, it broke out in the H. C. ship *Sir David Scott*, lying at the new anchorage off Saugor Island, Bengal, where she had already been two months, and was preparing to proceed on her voyage to China, her crew in perfect health. On the day just mentioned a poor old man was seized with cholera and died. The next day a fatal case occurred in a fine young man; third day there was another fatal case; fourth day ten new cases occurred, of which two were fatal; fifth day there were thirteen new cases, (all young, strong, and previously healthy men,) and five of them were fatal; sixth day eight new cases, one fatal; seventh day four persons were attacked, of whom two died; the next two days there were no cases, but after this a great many mild cases occurred, none of which proved fatal.

"In searching for a cause of this visitation of cholera," says Mr. Grant, "there is nothing to be found in the state of the atmosphere, as indicated by the thermometer or barometer, that will assist us; for there was no kind of change from what had previously existed: the heat was not greater than usual; thermometer from 78° to 86° F. The ship had been in its place of anchorage for two months, and during that time the crew had enjoyed perfect health: the breezes at that time always blew from seaward, and were cool and pleasant; *there was no cholera in Calcutta, nor anywhere in our neighbourhood*: it came upon us like a thunderclap. That it proceeded from some cause which had a general influence over the whole of the ship's company, but on some more powerfully than others, I have reason to believe, as there was a great and an immediate change in the looks of the people, which might, in some degree, be occasioned by the

\* Ed. Med. and Surg. Journ. July, 1831.

† Report of M. Prunelle to the French Chamber of Deputies. Arch. Gen. September, p. 136, 7.

fears that pervaded their minds: but there was something more than that; for, on looking at the tongues of those otherwise in health, they were invariably much loaded, usually covered with a thick white crust.\* He adds, "the disease was certainly not contagious."

We have thus examined in succession the principal circumstances which have been adduced in evidence of the contagiousness of cholera, and contrasted them with the facts which have been related of an opposite character. We leave our readers to draw their own conclusions from them. There is one fact however, not yet mentioned, which we will here notice, and which appears to be nearly decisive of the question—an experimentum crucis almost, as to the disease not being communicated from one person to another, which is, that persons have left infected districts, and died of the disease in various places, without the disease having been communicated to any of the inhabitants of those places. Thus the family of the Prince of Persia left Tabriz whilst the disease was prevailing there, and for the first ten days from four to six members of his suite were attacked daily, wherever they went, and yet not a single person of the villages through which they passed, or where they slept, took the disease.†

We have already noticed the fact of many Russian families flying from infected places, taking refuge in a small town in the Palatinate of Kalisch, without conveying the disease with them.

Dr. Albers in his official report, states that—

"During the epidemic, it is certain that about forty thousand inhabitants quitted Moscow, of whom a large number never performed quarantine; and notwithstanding this fact, *no case is on record of the cholera having been transferred from Moscow to other places*, and it is equally certain that in *no situation* appointed for quarantine, *any case of cholera has occurred*. That the distemper is not contagious has been yet more ascertained by the experience gathered in this city."

Several individuals from Riga died at Wenden and other parts of Livonia, without communicating the disease to a single person, while on the other hand, the disease spread in Courland and on the Prussian frontier, notwithstanding every effort to check its progress.‡

The advocates of contagion have not been insensible to these difficulties in the way of proving the contagiousness of cholera, but they have endeavoured to destroy their force by the assumption that the

\* Cases of Indian Cholera. By Nathaniel Grant, Esq. London Medical and Physical Journal, October, 1831.

† Med. Chir. Trans. xii. 363.

‡ Report of the British consul at Riga.

virus requires "a certain predisposition of frame to manifest itself, even although exposure by contact of, or proximity to the affected be undisputed;"\* and they have gone so far as to attempt to prove that it is the same in all contagious diseases, even small-pox.† This necessity for a predisposition that contagion may be received, is truly something new in the history of these affections. That we occasionally meet with individuals who from idiosyncrasy or some unknown cause are *insusceptible* to contagion, is true, but the whole history of contagious diseases shows that such instances are rare. Is it to be believed then that of hundreds of hospital physicians and nurses exposed to contagion, that but few only should be affected? that a contagious disease should ravage one side of a street or market place, and find all those on the opposite side insusceptible to its action? that it should be confined to one portion of a populous camp or city, although no means were taken to prevent its extending over the whole of the dense population of either? or that persons labouring under a contagious disease should be carried into crowded hospitals, without communicating the disease to any one? And yet all these things have happened.

Our readers will perhaps think that we have dwelt too long on the subject of contagion; but it involves a question of extreme importance, the efficacy of quarantine regulations for arresting the progress of the disease; and as the pestilence continues to extend, and may even reach this country, it cannot be too soon determined whether it can be conveyed by persons or merchandise; since if it can, it is high time that sanitary measures were put in force. We have already shown a part of the evidence by which this point is to be determined, and shall presently present some further remarks on the subject. Let us first, however, consider the other theories which have been offered to explain the propagation of the disease.

Those who believe in the miasmatic origin of the pestilence, adduce in support of their opinion many facts, which, it must be admitted, are not without weight. Among these is the partiality of the disease for the margins of rivers and marshes, for low damp places in the vicinity of stagnant water—its occurrence on board ships which had no intercourse with the land, and attacking officers in their boats on the Ganges, far from any source of contagion—the restriction of the disease to particular limits, so that persons on arriving within these li-

\* See an article in the *Foreign Quarterly Review* for October last. Mr. Kennedy in his work enumerates this predisposition as one of the laws of cholera.

† See an article in the *Quarterly Review* for October last.



mits became affected, whilst danger ceases on their leaving such spots—the peculiar liability of those who are exposed to the night air—and the extinction of the disease during winter and its reëpearance in spring when vegetable decomposition begins.

Mr. COTHER states that—

“Generally speaking, the cholera has been observed to take the course of the rivers, more or less; and has always been more destructive in villages, whose situations are low, and contiguous to wet paddy fields. In some of the largest and most populous places whose sites are elevated, it has not as yet appeared at all, though at the distance of only ten or twelve miles, in places otherwise situated, it has been very prevalent.”\*

Mr. CHAPMAN says, that during his march with the details of the 1st and 8th Light Cavalry to Seroor,

“No case of cholera appeared in camp until our arrival within a few marches of Obittledroog, when unfortunately having pitched on the banks of a nullah, containing a large quantity of stagnant water, it was lamentable to observe that in a few hours from the time of our arrival, no less than fourteen cases of Scpoys were admitted into the hospital, suffering from the spasmodic cholera in its gravest form. I took an opportunity of remarking to the officer commanding, the probability of the disaster having been occasioned by the encampment in the situation above described, and I have the satisfaction of observing that much attention being subsequently paid to this in particular, the disease in a few days suddenly left the camp, and not three cases occurred afterwards, in a march of two months.”†

Mr. HENDERSON states that—

“While in charge of the 13th Light Infantry in Burmah, in December, 1825, they were encamped along with the 38th and 47th, two of His Majesty’s Regiments on some jungly ground near Patnago—early in the morning, an officer of the 13th was attacked, and died in a few hours; one of the 47th shared the same fate, and the disease became general in the division, in twenty-four hours; from fifteen to twenty men fell victims to it. In the course of the following day, the divisions were ordered to take up new ground, on a height about a mile and a half in the rear, which was done in the course of the evening, and not a single case occurred in either corps after this move.”‡

Mr. Chapman observes, that whilst at Cape Comorin,

“Although little cholera was at this time prevailing among any other class of people, it became remarkable, that the grass-cutters of the escort were frequently attacked, and that, usually in the evening, after having gone to a tank to cleanse their grass. On one occasion, two grass-cutters had been together at this tank, at the same time; they were both attacked on the same night, at the same hour, and died on the following morning. Out of eighteen grass-cutters, we lost five, besides others being affected, in the space of three weeks;

\* Madras Report, p. 140.

† Ibid, p. 182.

‡ Ibid, p. 39.

it was presumed, that the circumstance was in some measure connected with the putridity of the water contained in the tank, and which certainly bore every appearance favourable to such an idea, being scarcely passable from the nauseous effluvium which it evolved. The impression made upon the minds of these individuals themselves, was corroborative of this opinion: the tank was spontaneously deserted by them, and no case of cholera occurred during a subsequent period of nearly nine weeks' stay at the same place.\*

Dr. PETER SCOTT remarks in his report to the Madras Board, that—

“Dry, clean, open situations were obviously the most healthy; while more filthy situations, and such as were inhabited by the poorer classes, generally presented a great number of sick, and those frequently of a bad description. This was well illustrated at Vipery, in a situation abounding with stagnant water, the receptacle of every species of filth, but more especially at the spot, where I strongly suspect the epidemic first broke out at Madras, and where many fell victims to its severity; for, it was observed to be more prevalent amongst, and indeed for the first two or three days almost exclusively confined to, the natives residing in some huts, about which much offensive and corrupted matter had been accumulated, while those occupying the houses almost contiguous suffered but slightly, though comparatively more, than the inhabitants in the adjacent and more distant streets.”†

It is also stated in the Madras Report, that, during the prevalence of cholera at Madras, the crews of two ships—the *Fairlie* and *Coutts*, then in the Roads, became the subjects of the disease, but it did not appear on board the *Coutts*, till a fortnight after it had prevailed on the *Fairlie*—and it was noticed that “the men who worked upon deck, and those who slept to the landward side of the ship, were in both vessels decidedly the most obnoxious to the attacks of the disease.”

These and a multitude of other similar instances that might be adduced, would, in the absence of facts of an opposite character, be conclusive as to the miasmatic origin of cholera,‡ and at least seem to show that malaria has some agency in its production. We are not disposed to allow much weight to the fact of the exemption from the disease of some places particularly favourable apparently to the production of malaria, whilst situations in the vicinity less favourable have been ravaged with the disease, of which some remarkable examples might be cited.

Nor can we consider its progress against the course of the winds, of which there is a striking example in the advance-

\* Madras Report, p. 23.

† Ibid, p. 19.

‡ A very remarkable instance of the production of cholera by miasmatic exhalation occurred at a school at Clapham, England. The particulars will be found in our *Periscope*, art. *Miscellaneous Intelligence*.

ment of cholera down the Coromandel coast against a strong monsoon, as *conclusive* against the disease being caused by miasma; since the property of penetrability possessed by gases, and which has but lately been investigated, may perhaps offer a solution of this difficulty; and farther, the progress of the disease appears to have been much slower when opposed to currents of air, than when in the same direction.

But we must not shut our eyes to the fact of the disease occurring in places, which, if there be any such on the globe, must be incapable of engendering terrestrial miasma. The arid sands of Arabia, the rocky ridges of the Caucasus, and the nitrous steppes of Tartary, have not been exempt from the pestilence. Orenburg, where it broke out in 1829, appears from the description of Dr. Sakolov, to be one of those happy spots which would be selected by a physician for its peculiar exemption from all those circumstances which engender miasma. It is situated in an extensive undulating plain, traversed by fine streams, and is built on the higher bank of a river running in a defined channel, with no bogs or miry meadows at its margin, and the whole territory of Orenburg is nearly of the same nature, and the locality of the towns appear to have been well chosen.

The fact too of the disease having prevailed in Russia in defiance of intense frost, its continuing in many parts of the Orenburg government when the temperature was far below zero, and even breaking out in some places when the thermometer was 29° Fah.\* when, of course, the idea of animal or vegetable putrefaction going on is out of the question, and when so far as our present knowledge extends, this pestiferous agent cannot exist, seems incompatible with the opinion, that the disease is propagated solely by terrestrial miasma.

We shall not inquire into the agency of solar influence, or particular electric states of the atmosphere in the production of the disease, since they are mere hypotheses, resting on no ascertained facts; and the former has been most conclusively disproved by Mr. Scott, who has likewise shown that the latter has at least but little plausibility.

The only other theory we shall notice is that which ascribes the

\* In Tiriss-Usmanova, a Mahomedan village, above one hundred and thirty miles north-east from Orenburg, containing seven hundred inhabitants, the disease broke out for the first time on the 5th of December, when the thermometer was at 29° Fah.; under the same degree of cold it prevailed till the 23d of the same month; and in this short interval it seized one hundred and forty-seven persons, or above a fifth of the population, of whom thirty-seven, or nearly a fourth died. Several analogous occurrences are related in the Russian reports.

disease to some peculiar and unknown distemperature of the atmosphere. It has been objected to this, that if the germ of the disease existed in the air, it should travel under barometrical laws; should be propagated in the direction of the winds, and its velocity should be as great, and that every country over which the wind blows should be affected.

That a vitiation of the air may exist, which is inappreciable by any of our instruments, can scarcely be denied. Who has detected by the thermometer, the barometer, or by chemical analysis, marsh or animal miasmata, or the contagious principle of small-pox? Who has detected the particular vitiation of the atmosphere productive of the "influenzas" which have so often pervaded the whole surface of the globe, and which cannot depend upon marsh or animal decomposition, since they have prevailed equally in the intense cold of winter as well as in the heats of summer, and in every variety of locality.

That the extension of this atmospheric distemperature is independent of the course of the winds, is shown by the whole history of these epidemics. That which is prevailing in this country at the present moment appeared at Canton and Manilla in November, 1830; it preceded the cholera in Russia, Poland, and Prussia; prevailed in France in May and June last; in England during the heats of July and August, and reached this country in November, and has continued during one of the most intense winters we have had for many years. The course of these epidemics, with a single exception, so far as we can learn, has been from east to west, gradually extending without regard to prevailing winds.

That some general distemperature of the air exists during the prevalence of cholera,\* and that this vitiation takes place gradually, and produces a particular diathesis, appears from sufficiently conclusive evidence.

Dr. Walker, in his report to the British government, states, that by far the greatest part of the medical men, (of Moscow,) are of opinion that the disease is not contagious, but produced by some pecu-

\* Even animals have felt the influence of this distemperature. In Hindostan, in 1817, numbers of cattle are said to have died of cholera; numbers of dogs were attacked in the streets of Calcutta in October, 1827, with choleric symptoms, and died. Mr. Chalmers says that in the towns in India near the hills, where cholera was so fatal, a disease occurred among the cattle which kept pace with, and often exceeded in mortality that of the human species. Dr. Ranken states that goats and camels died of it at Rajputana, and Dr. Jaehnichen says that in Moscow, during the prevalence of the epidemic, poultry, as chickens, turkeys, &c. were affected. It is said in Prussia that multitudes of fish died during the prevalence of the epidemic.

liar state of the atmosphere not cognizable by either our senses or by instruments; that this was proved by almost every person in the city feeling during the time some inconvenience or other, which wanted only the exciting cause of catching cold, or of some irregularity in diet, to bring on cholera.

During the prevalence of the disease at Orenburg, Dr. Onufriev states that there was scarcely a single inhabitant who had not some symptoms of disordered digestion. At St. Petersburg, previously to the appearance of the epidemic, every person complained of a tendency to diarrhœa, which in some cases was very profuse,<sup>\*</sup> and it was the same at Berlin, according to Dr. Steffen.<sup>†</sup> Six months before the epidemic invasion of Poland, sporadic cases of a most violent character occurred.<sup>‡</sup> The British consul at Riga, in his report to his government, states, that half the town has been visited by diarrhœa, and that the slightest deviation from the regimen now prescribed, (consisting principally in abstinence from acids, fruit, beer, &c.) invariably produces an attack of that nature, and generally cholera; fright and intoxication produce the same effect.

Dr. Burne informs us, that during the raging of the cholera on the continent, there occurred at the Chancery Lane Dispensary, London, a great number of cases of dysentery, diarrhœa, and cholera, which had so decided an epidemic character, that he believed them to be produced by the causes which were in operation on the continent.<sup>§</sup> Whilst cholera has been committing such ravages in various places in the Baltic, Elsinour and the adjacent islands, have been visited by a peculiar form of disease, attended with much derangement of the digestive organs; sometimes passing into severe intermittent fever, and at others presenting the appearance of malignant typhus.||

The following extract of a letter from Dr. J. Brown to Drs. James Johnson and Tweedie, dated Sunderland, Nov. 10th, 1831, will shew that previously to the prevalence of cholera epidemically in that town, there was a marked predisposition to bowel complaints.

"Early in the month of *August*, cholera appeared and speedily became very prevalent. It ranged in all degrees of intensity, from slight bilious attacks, to cases attended with violent spasm, coldness, collapse, almost (if not complete) arrest of the circulation, *white discharges, suppression of urine, and in short, all the symptoms ascribed by observers to the Asiatic and Continental diseases.* Of these more intense cases, several were fatal, some of them within twelve hours; whilst

\* Gibbs in *Edinburgh Medical and Surgical Journal*. April, 1831.

† *Gazette Médicale*, Oct. 22, 1831.

‡ M. Chamberet's communication to the Royal Academy of Medicine. *Gazette Médicale*, Oct. 1831.

§ *London Medical Gazette*, Vol. VIII. p. 462-7. | *Ibid*, p. 829.

No. XVIII.—Feb. 1832.

others narrowly escaped by prompt and skilful medical assistance. Such cases occurred in situations remote from each other; some of them several miles inland—one, for instance, and that a fatal one, in a female living in the village of Boldon, five miles in the interior, and remote from the river. Others of the agricultural population suffered in various situations: some certainly near the river, but there were no ships in at the time, which had come from suspected places.

"On the abatement of the heat, cholera became less general; but did not totally cease, cases continuing to recur at intervals, some fatal, others of great intensity, but terminating favourably; whilst the prevailing gastric and intestinal constitution was marked by the frequent occurrence of cases of fever, commencing with vomiting and purging of matters variously coloured—in short, by symptoms of cholera; and this state of things continued till the almost simultaneous occurrence of four deaths from cholera, on the 21st ult. and 1st inst. excited general alarm.—For what has subsequently occurred, the reports to the Board of Health must be referred to.

"Whilst matters are thus proceeding in Sunderland and its immediate vicinity, information I have received from various channels, leaves no doubt on my mind, that a similar train of events has been in progress generally throughout the north-eastern division of the kingdom—the same prevalence of fever, of which the initiatory stage is marked by vomiting and purging—the same occurrence of fatal cases of cholera, since the season of heat and fruit had passed; but so far as I know, the same prevalence of the intense forms of the disease has not been manifested elsewhere as here; yet this difference in degree does not, I imagine, make our state *essentially* different.—What is our fate to-day may be that of others to-morrow. A fortnight ago we were no worse than our neighbours."

Dr. G. Otto, of Copenhagen, in a letter with which we have been lately favoured, informs us, that there is at present prevailing in Copenhagen, a marked disposition to diseases of the digestive organs, as diarrhœa and common bilious cholera; and it is remarkable too, he adds, that the evacuations of common cholera, which are usually bilious, have become watery and slimy, which circumstance, he says, makes him believe that the disease will gradually change into epidemic cholera. "I have," he further observes, "within the last fortnight, treated some cases which were so violent, and in all their symptoms so like oriental cholera, that were the epidemic prevailing in the town, I should not have hesitated to declare them to be that disease."

If the fact of the disease being often confined to particular limits be urged against the existence of a general distemperature of the air, such objection is much more available against the contagiousness of the affection; since, to explain its not spreading, it is necessary to believe that it will affect those only who are predisposed, an assumption in relation to a contagious disease, which we have already shown

to be entirely gratuitous. Whilst on the contrary, it appears to require no very great stretch of faith to believe, that excesses in eating and drinking, exposure to night air, &c. which the contagionists consider as forming the predisposition, may excite the disease, and that their action is generally required for its production.

Nor does it seem very difficult of belief, that in low, damp, filthy, ill-ventilated places, that the distemperature of the air may be increased, and the mortality of the disease therefore greatest in such situations.

We shall not dwell, however, on this point. It has been our object to present our readers with facts, and not with arguments; and we leave it, therefore, to them to decide how far this last theory is reconcileable with the phenomena of the disease.

Before leaving this branch of the subject, however, we may say a few words in relation to the production of a local focus. That in cholera, as in dysentery, fevers, and in several diseases, where a number of patients are confined in a small, dirty, ill-ventilated apartment, the atmosphere may be so vitiated that healthy persons remaining in such a place become particularly liable to the disease, we cannot in the present state of our information either aver or deny, but some facts which have been related, incline us to the affirmative. But even if this be a fact, it is still to be proved that this arises from a *specific* emanation from the bodies of the sick; and not from a vitiation of atmosphere—the same in all diseases—which only predisposes to disease—whilst the particular form is determined by the reigning epidemic constitution; and that there does exist at times a disposition to certain diseases in preference to others, independent of the existence of what is considered as a specific virus, seems indisputable.

We must not conclude this article, although it has already grown to too great a length, without offering some remarks on the sanitary measures which should be adopted in relation to this disease. Among the first, we must enumerate the avoidance of all excesses in eating and drinking, and all those causes which ordinarily produce derangement of the digestive organs. Surgeon Daw quotes the following fact as an illustration of what care and temperance can perform in the way of protection from the attacks of cholera. The fact is not of itself conclusive, but connected with other circumstances, it is at least important.

“Two bodies of men, one amounting to three hundred, the other one hundred persons, were located in adjoining situations when the cholera arrived. The smaller body immediately determined to live temperately, and by avoiding the night air, and the other predisposing circumstances, which were obvious, to endeavour to escape the distemper. The plan succeeded so well that only

one individual was seized of the one hundred. The larger body adopted no precaution. They lived in their usual way, and one-tenth of their whole number perished.”\*

It is equally important to attend to personal and domestic cleanliness, and to ventilation; to avoid dwelling in low, moist situations, and especially sleeping in damp, ill-ventilated apartments; and in general to shun all those causes which we have pointed out as predisposing to or exciting the disease, and which we need not again here enumerate.

Finally, should the disease appear in any of our cities, the hygienic measures we have alluded to, should be enforced by the proper authorities. If the place in which it occurs be filthy, ill-ventilated, with the dwellings close together, and a crowded population, the measures found so useful in yellow fever should be resorted to. The inhabitants should be dispersed until the place can be perfectly cleansed and purified. When, however, it extends to the more cleanly parts of a city where there is a free circulation of air, such a measure would be productive of great distress and inconvenience to the inhabitants, without the slightest beneficial result to others.

We have not included quarantine regulations or the insulation of places among our sanitary measures, because a careful examination of all the documents to which we have had access, and they are very numerous, have not satisfied us that the disease can be communicated from one person to another, or conveyed by merchandise; and ample experience abroad has shown the utter inefficacy of both these means in arresting the progress of the disease, and the great aggravation of it, and the awful distress which is caused by the latter. It is vain to say that these quarantines and cordons sanitaires have been evaded; if they cannot be rigidly enforced by the despotic governments of Europe, what are we to expect from them, (allowing the disease to be contagious,) in this country. On the first appearance of the pestilence, Russia formed immense military lines for the purpose of arresting its progress; St. Petersburg and other places were completely surrounded—what has been the result? the disease has spread over the empire, and the inefficacy of these measures have been there acknowledged. The moment the revolution broke out in Poland, that unhappy country was completely environed by the troops of Austria and Prussia, and when the cholera appeared there, these cordons were increased, and the most rigid quarantine enforced. M. Brière de Boismont, in his journey to Poland, had to pass through these lines, and bears testimony to the severity with which sanitary

\* Kennedy, p. 91.



measures were executed. M. Prunelle, in his report to the French chamber, states that those of Prussia have been enforced with a strictness before unknown. Nevertheless, three months scarcely elapsed from the appearance of the pestilence in Poland, before it had passed the triple cordons sanitaires of Austria and Prussia, pervaded the whole of the grand duchy of Posen, ravaged eastern Prussia, penetrated into Silesia, and destroyed thousands of victims in Galicia. The pestilence advanced towards Berlin:

"Its progress," says M. de Boismont, "is disputed foot by foot, with all the energy of despair, a last cordon is created on the Oder, composed of the élite of the Prussian troops, the guards; nevertheless, the cholera entered the capital early in September. Those who know Prussia, will not doubt that the orders of the government were rigorously enforced. The same measures were taken to protect Vienna, and with the same results."

Austria and Prussia, like Russia, have withdrawn all their cordons, and acknowledge not only their inutility, but that they are productive of immense evils.

We will spare our readers the details of the horrors which have resulted from the insulation of places where the disease was prevailing. Those who have read the vivid description of the plague in London, by Defoe, may have some idea of the scenes presented at Opatow, a town in the palatinate of Sandomir, and in other places which have been insulated, whilst the disease was raging in them. The total suspension of business—all succour cut off—the sick, the dying, and the dead mingled together, and alike neglected—every inhabitant agonized with terror, and thus subjected to one of the most powerful predisposing causes of the pestilence—and all those scenes of human wretchedness and depravity, which are too often enacted when men are released from the controul of the laws, and abandon themselves to despair.

The length of this article admonishes us that we must come to a conclusion, though we are far from having exhausted the subject. It has been our object, however, to present our readers materials upon which they may form their own judgments, rather than to lead them to adopt our conclusions, and have therefore candidly stated the prominent facts, without concealing those which militate against the various theories we have examined, or attempting to reconcile their discrepancies by ingenious sophistries.

The consideration of the pathology and treatment of the disease must be postponed to a future occasion, and we regret this delay the less, inasmuch as it will enable us to benefit by the additional lights which will no doubt be shed upon these subjects, by the able and acute minds now engaged in the investigation.